THE WATER BIRDS

OF

NORTH AMERICA.

VOL. II.

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AT HARVARD COLLEGE.
Vol. XIII.

THE
WATER BIRDS
OF
NORTH AMERICA.

BY

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AND
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THE
WATER BIRDS
OF
NORTH AMERICA.

ORDER ANSERES.

THE LAMELLIROSTRAL SWIMMERS.

(*Continued.*)

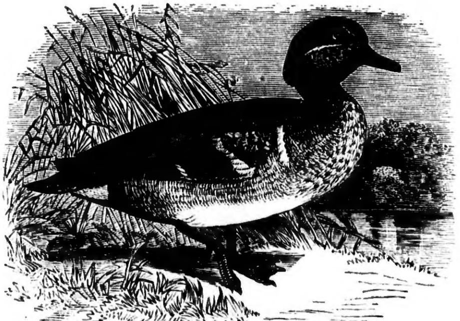
GENUS **NETTION**, KAUP.

Nettion, KAUP, Entwick. 1829, 95, 196 (type, *Anas crecca*, LINN.).

Querquedula, BONAP. Comp. List, 1838, et AUCT. var. (not of STEPHENS, 1824, and subsequent authors).

CHAR. Bill shorter than the head, narrow, depressed (except at base), the edges parallel; tarsus shorter than the bill or middle toe; nape with a small mane-like tuft; rectrices more or less acuminate, the middle pair longest.

This genus is very readily distinguished from *Querquedula* by the very different form of the bill, which is more like that of *Dafila*, but much smaller, being much more depressed terminally, and proportionally deeper through the base than in *Querquedula;* while the lower edge or maxillary tomium is either gently convex throughout (as in the southern species), or straight anteriorly and decid-

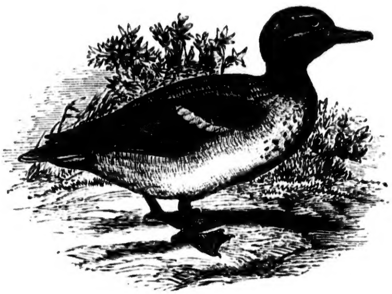


N. carolinensis.

edly convex posteriorly (as in the northern forms); the lamellæ being thus completely hidden. In *Querquedula*, on the other hand, the terminal portion of the tomium is strongly convex, and the posterior half cut away, as it were, so as to fully expose the lamellæ. Through the forms occurring in the southern hemisphere,[1] this genus leads directly to *Pœcilonetta*, which in turn is intermediate between *Nettion* and *Dafila*.

The two species of *Nettion* occurring in the northern hemisphere are much alike, the males being very handsome in plumage; they may be distinguished as follows:—

COM. CHAR. *Adult males:* Head and upper half of the neck chestnut-rufous, marked with a large patch of metallic green on each side the head, behind the eye; chin and upper part of throat dull black; nuchal tuft blue-black; lower part of the neck, upper part of the back, scapulars, and lateral parts of the body beneath, beautifully undulated with black and white; outer scapulars marked with black and white; speculum bright metallic green, the lower feathers black, tipped with white; crissum black centrally, creamy buff laterally. *Adult females:* Wing, only, as in the males; elsewhere varied with dusky and brownish white, the former prevailing above, the latter beneath; the abdomen nearly or quite immaculate.



N. crecca.

1. **N. carolinensis.** A broad white bar across side of breast, before the wing; inner webs of outer scapulars vermiculated with dusky and brownish white, the outer webs marked with a longitudinal lanceolate spot of black, bordered internally with a white line. *Hab.* North America generally.
2. **N. crecca.** No white bar on side of breast; inner web of outer scapulars wholly, and outer web partly, white; exposed surface of outer webs almost entirely black; undulations of sides, etc., much coarser than in *N. carolinensis*. *Hab.* Palæarctic Region, occasional in Eastern North America.

Nettion carolinensis.

THE AMERICAN GREEN-WINGED TEAL.

Anas crecca, var. FORST. Philos. Trans. LXII. 1772, 383, 419.

Anas (*Boschas*) *crecca*, var. SW. & RICH. F. B. A. II. 1831, 443. — NUTT. Man. II. 1834, 400.

Anas crecca, "LINN." WILS. Am. Orn. VIII. 1814, 101, pl. 60, fig. 1 (not of LINN.). — AUD. Orn. Biog. III. 1835, 218; V. 1839, 616, pl. 228.

Anas carolinensis, GMEL. S. N. I. ii. 1788, 533. — AUD. Synop. 1839, 281; B. Am. VI. 1843, 281, pl. 392.

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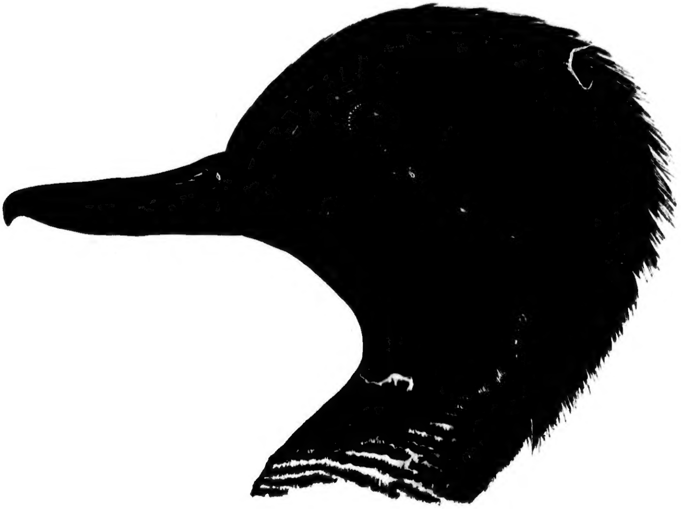
[1] Among these may be mentioned, as very close to true *Nettion*, but approaching *Pœcilonetta* in the form of the bill and the greater elongation and acumination of the scapulars, tertials, and rectrices, *Anas flavirostris*, VIEILL., of South America, and "*Querquedula*" *Eatoni*, SHARPE, of Kerguelen Island.

Querquedula carolinensis, STEPHENS, Shaw's Gen. Zool. XII. ii. 1824, 128. — COUES, Key, 1872, 287, Check List, 1873, no. 495; 2d ed. 1882, no. 715; B. N. W. 1874, 565.
Nettion carolinensis, BAIRD, B. N. Am. 1858, 777; Cat. N. Am. B. 1859, no. 579. — RIDGW. Nom N. Am. B. 1881, no. 612.
Anas americana, VIEILL. Enc. Méth. 1823, 155.
"*Anas sylvatica*, VIEILL. ?"

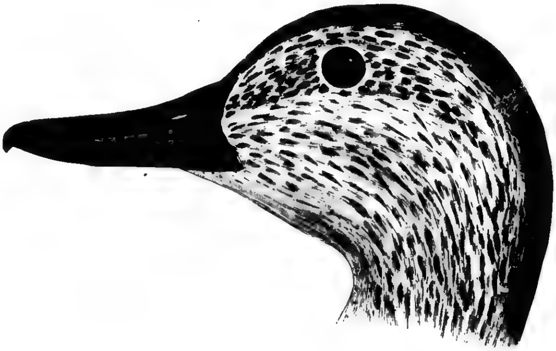
HAB. North America in general, breeding chiefly north of the United States, migrating south as far as Honduras and Cuba. Greenland.

Adult male: Head and neck rich chestnut-rufous, inclosing a broad patch of soft dark metallic green on each side of the occiput, from the eye (which it surrounds) down the sides of the nape, where the two areas of the opposite sides touch a short nuchal crest of bluish-black. The green patch bordered anteriorly and beneath by a yellowish white line, and a less distinct line of the same bordering the base of the upper mandible, extending thence back to, and indistinctly following, for a short distance, the upper anterior portion of the green patch. Chin and upper part of the throat dull black. Front of the jugulum deep pinkish cream-color, with roundish and transversely ovate spots of black. Collar round the lower neck, sides of the jugulum, sides, and flanks, very delicately and beautifully undulated with black upon a white ground; outer scapulars similarly waved. Sides of the breast with a large transverse bar of plain white. Crissum rich deep cream-color, bounded anteriorly, and divided medially, with velvety black; post-femoral region waved like the flanks; rest of lower parts plain white, sometimes tinged with cream-color. Back, scapulars, rump, wing-coverts, primaries, and tail, plain cinereous. Outer row of scapulars with their outer webs about half velvety black bordered interiorly with a white line. Last row of coverts broadly tipped with deep ochraceous; speculum opaque black, narrowly tipped with white, the four or five upper feathers with their outer webs richly brilliant soft metallic green, varying from golden to violaceous, according to the light. Bill black; iris brown; feet light fleshy (horn-color when dried). *Adult female:* Wing as in the male, but duller. Above, cinereous-dusky, variegated with edgings and transverse bars of ochraceous-white. Ground-color of the head, neck, and lower parts, dingy whitish, more or less tinged with ochraceous; head and neck speckled with dusky, the spots enlarged and aggregated on the pileum, so as to form the prevailing color, and also along



the upper border of the ear-coverts, producing a stripe from the eye back. Jugulum, sides, and flanks more heavily spotted with dusky. Abdomen sometimes plain, but usually speckled. Bill brownish; iris brown; feet pale brown (fleshy in life).

Young male: Similar to the adult female, but entire abdomen and sides immaculate white. *Downy young:* Above, grayish brown, with a light grayish-buff spot on each side the back, and a similar pair on the rump; wings crossed near the end by a light grayish-buff bar. Head, neck, and lower parts light dull buff; crown and occiput covered by an elongated patch of grayish brown (darker than the back), this scarcely reaching the forehead, but continued down the nape to the brown of the back; a dusky streak behind the eye, not reaching to the occiput; below the posterior end of this, an oblong spot of grayish brown.



Total length, about 14 inches; extent 20.00 to 24.50; wing, 6.25–7.40; culmen, 1.40–1.60; tarsus, 1.25; middle toe, 1.30–1.35.

Many specimens, both males and females, have the lower parts tinged with ferruginous-orange, like the stain on the head of the Swans and White Geese. Sometimes this tinge pervades the whole under surface, and is occasionally so deep as to give the lower parts a uniform ferruginous aspect. Adult females usually have the abdomen and sides thickly spotted or flecked with brown, being thereby readily distinguished from the young males, which have the whole abdomen, etc., immaculate white.

The common Green-winged Teal, so closely allied with the Teal of Europe, has an extended distribution throughout North America. During the summer it is found in the extreme northern portions from Greenland to Alaska, and in the winter it extends its migrations to Mexico, Central America, and the West India Islands.

Mr. Leyland met with individuals of this species on the Ulua River in Honduras. Mr. Dresser found it in Southern Texas, but it was not very common. In Western Mexico, according to the observations of Colonel Grayson, it is abundant from November to March. It was seen in flocks, although rarely, by Dr. Kennerly, in Chihuahua. It breeds at least as far south as latitude 42° N., as its nest has been taken in Southern Wisconsin, and it is said to breed in Western Iowa, and thence northward, in favorable situations, throughout the continent, as far north as the Arctic Ocean.

Captain Bendire found this species a common summer resident in Eastern Oregon, where also it breeds, seeming to be more partial to the smaller mountain streams than to the large bodies of water in the valleys—at least during the seasons of reproduction.

In the Aleutian Islands Mr. Dall states that he found it to be abundant in the winter, and to breed occasionally in Unalashka. The greater number of individuals migrate northward about the 1st of May. Mr. Bannister found this bird very common at St. Michael's and at Nulato, as well as on the Yukon River generally. According to Mr. Dall, it is one of the earliest comers to that region, and one of the first to lay. He obtained its eggs from a nest of dry grass in a sedge tussock about May 20. Except while migrating this bird appeared to be solitary in its habits. Mr. Dall regards it as far superior to any other Duck for the table. It was obtained from Sitka and Kadiak by Mr. Bischoff, and is nowhere rare in any part of the Yukon Region. Richardson speaks of it as being abundant even as far north as the extremity of the continent, both in the wooded and in the barren districts. Captain Blakiston obtained it on the Saskatchewan, as well as Hudson's Bay; and it was found by Mr. Bernard Ross common on the Mackenzie, to the Arctic Circle. Hearne states that it is found at Hudson's Bay in considerable numbers near the sea-coast, and is still more plentiful in the interior parts of that region, flying in such large flocks that he has often killed from twelve to fourteen of these birds at a single shot, and has seen both Indians and English kill a much larger number of them. At their first arrival they are usually quite poor, although even then they are generally esteemed good eating. He adds that this species is far more prolific than any of the Ducks resorting to Hudson's Bay, and that he has seen the old ones swimming at the head of seventeen young when the latter were not much larger than walnuts. This Duck remains in that region as long as the season will permit, and some were killed by Hearne, in 1775, on the way from Cumberland House to York Fort, in the rivers he and his party passed through, as late as the 20th of October. At that time the birds were a perfect mass of fat, and their delicate white flesh was regarded as a great luxury.

The Green-winged Teal is found in even greater abundance on the Pacific than on the Atlantic coast. Mr. R. Browne gives it as one of the common birds of Vancouver Island.

Mr. E. Adams ("Ibis," 1878) mentions that this species was present, but not numerous, about St. Michael's. A few pairs were generally to be found near the most grassy of the lakes, where they were continually playing about, ducking their heads, and catching insects from the surface of the water. They were late in arriving, none coming before the 20th of May, but remained to breed. Their name in the Eski dialect is *Ting-a-zo-meók.*

According to Dr. Cooper, during the wet season it migrates throughout the entire State of California, appearing on every little pool and stream in large flocks, especially toward the north. It remains throughout the winter as far north as Puget Sound, and also occurs all the way from there to Mexico. It is much less timid than the larger species, and, congregating closely together, often furnishes to the sportsman a fine supply of game, while its flesh is as good as that of most other kinds, and is, indeed, by some preferred to all others.

According to Dr. Newberry this Duck breeds in the mountains of Oregon, although he did not succeed in finding its nest.

Mr. J. A. Allen met with it near Fort Hays, in Western Kansas, in May. He afterward noticed it in great numbers in the valley of Salt Lake. Dr. Cooper also found it common in St. Mary's Valley, Montana, in August. It probably breeds among the neighboring mountains.

In its migrations, both in the fall and spring, it is abundant throughout New England. In the fall it is common on the coast, and on the inland waters late in October. In open winters a few of these birds remain nearly throughout the season.

In Long Island, according to Giraud, many postpone their departure until quite late in the winter. Associated usually in flocks, they frequent the streams and ponds, where they feed on insects and tender plants. In the earlier parts of the season they sometimes visit the ponds on the beach, although they more generally confine themselves to creeks and mill-ponds. At the South — where during the winter they are very abundant — they resort to the rice-fields in company with the Mallard. Their flesh is very highly esteemed, being tender and juicy, and always commands a high price in the markets of large cities.

This Duck is an occasional autumnal visitant in Bermuda, where, however, it is much more common in some years than in others. It is also spoken of by Dr. Bryant as being common in the Bahamas.

It feeds much at night, as indeed most of the fresh-water Ducks do when they cannot with safety seek their food along the shores by day. They live on plants, seeds, and insects. In autumn the males usually keep in separate flocks from the females and young. Their notes are rather faint and piping, and their wings make a loud whistling during flight.

Mr. MacFarlane found this species breeding near Fort Anderson. The nest was composed of feathers and down, and placed in a depression on a dry piece of ground.

Mr. Robert Kennicott, in his notes on this species, states that it is very rare on the Upper Yukon River, although he found it abundant in Oregon and in Washington Territory, and throughout British America as far north as latitude 70°; but he did not see it anywhere in the Mackenzie Region in any considerable abundance. As it is more common in the Atlantic States than in the valley of the Mississippi, the main body breed more toward the northeast, and breed beyond the limits of the United States in the region of Hudson's Bay. Though arriving in this country among the earliest of the migrating Ducks, this species is quite late in leaving the Yukon and the Mackenzie. Mr. Kennicott saw it October 2 at Fort Liard. The nests found by him were in nearly open ground, among moss, and generally far from water. In one instance he saw the nest of this Duck at the foot of a small spruce in a mossy, half-barren, small dry plain, and at least forty rods from water. This nest was a simple depression in the moss, but thickly lined with down, and well protected by the overhanging branches of the spruce. The female fluttered slowly off along the ground at his approach, and the nest was found to contain eight eggs. According to Mr. Dall nests of this species frequently have from sixteen to eighteen eggs.

Audubon says that the food of the Green-winged Teal consists principally of the seeds of grasses — which are collected when floating, or while still adhering to their stalks — small acorns, fallen grapes or berries, as well as aquatic insects, worms, and small snails. It is much more particular in the selection of its food than are most Ducks, and its flesh is therefore delicious, and probably better than that of any other of the Duck tribe. Audubon adds that when this bird has fed on wild oats at Green Bay, or soaked rice in the fields of Georgia or Carolina, it is much superior to the Canvas-back in tenderness, juiciness, and flavor.

On land it moves with more grace and ease than any other species except the Wood Duck, and it can run with considerable speed without its feet becoming entangled. In the water also it moves with great ease and rapidity, and on the wing it is one of the swiftest of its tribe. It rises from the water with a single spring, and so swiftly that it can only be hit by a very expert marksman; and it also dives readily when wounded. This is a fresh-water bird, and it is very rarely met with near the sea. Its migrations are over the land, and not along the sea-shore.

This Duck moves northward from Louisiana early in March, but remains nearly a month later in the Carolinas, a few lingering on the Delaware until the first week in May. Mr. Audubon met with none of this species in Labrador. It is quite common in Southern Wisconsin, according to Mr. Kumlien, arriving there early in the spring, and a few undoubtedly remaining to breed. He has never with certainty met with its nest, but has found one which he supposed must have belonged to this species.

The Green-winged Teal was found in abundance about Fort Resolution and Fort Yukon by Mr. Kennicott; at Fort Rae by Mr. L. Clarke; on the Yukon River and in the Mackenzie River district by Mr. J. Lockhart; on the Porcupine River by Mr. Jones; at La Pierre House by Mr. Iibbiston; on Big Island by Mr. Reid, etc.

Eggs of this species from Fort Simpson (Smithsonian Institution, No. 5034) are of a pure ivory white color. Three of these measure respectively, 1.80 by 1.30 inches, 1.85 by 1.35, and 1.75 by 1.30.

Nettion crecca.

THE EUROPEAN GREEN-WINGED TEAL.

Anas crecca, LINN. S. N. ed. 10, I. 1758, 126; ed. 12, I. 1766, 204.

Querquedula crecca, STEPHENS, Shaw's Gen. Zool. XII. ii. 1824, 146. — COUES, Key, 1872, 287; Check List, 1873, no. 494; ed. 2, 1882, no. 714; B. N. W. 1874, 566.

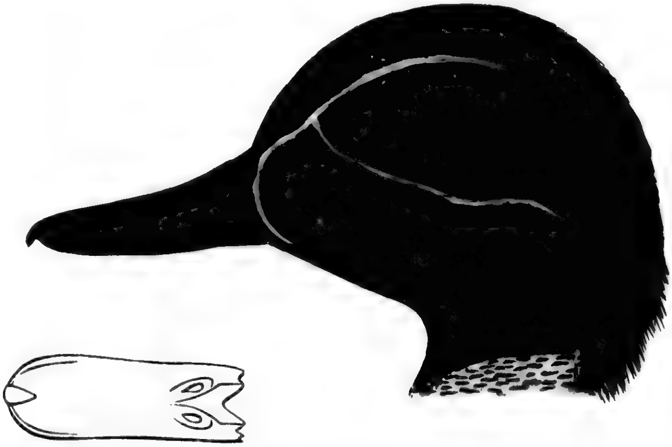
Nettion crecca, BAIRD, B. N. Am. 1858, 778; Cat. N. Am. B. 1859, no. 580. — RIDGW. Nom. N. Am. B. 1881, no. 611.

Querquedula subcrecca et creccoides, BREHM, V. D. 1831, 885, 886.

Teal, YARR. Brit. B. ed. 2, III. 281, fig.; ed. 3, III. 282, fig.

HAB. Palæarctic Region; occasional in Eastern North America.

SP. CHAR. *Adult male:* Similar to *N. carolinensis*, but side of the breast without any white bar; the outer scapulars with their inner webs creamy white, the forehead bordered on each side by a pale-buff line; and the sides, back, etc., much more coarsely undulated. *Adult female:* Not distinguishable with certainty from that of *N. carolinensis*?



Total length, about 14.00 inches; wing, 7.00–7.30; culmen, 1.45–1.50; tarsus, 1.10–1.25; middle toe, 1.25–1.30.

While unquestionably distinct from *N. carolinensis*, the male being very easily separated, we have not been able, with our limited material, to discover tangible differences between the females of the two species.

The Common Teal of the Old World fauna is of irregular occurrence in Eastern North America. Several specimens have from time to time been taken in the vicinity of New York city, and others have been found in the New York market by Mr. J. G. Bell. It has also been taken occasionally in different parts of Greenland, according to the testimony of the elder Reinhardt and of Holböll. It is also very common in Iceland.

In the Palæarctic Region it is widely distributed, occurring, at different seasons, over nearly or quite every portion of that country. In Great Britain and in Ireland it is an early and a constant winter visitant, making its appearance about the end of September, and remaining until late in the spring, its numbers being recruited through the winter by additional arrivals from the northern parts of Europe. In the spring many remain in both islands, and breed in various places — some as far south as Suffolk in England, and others in Wales. In Northumberland, according to Mr. Selby, the indigenous broods of the Teal seldom quit the immediate neighborhood of the place in which they were bred. This bird is quite abundant in Scotland, but less so on the Orkney and Shetland Islands.

It is widely and numerously dispersed all over Sweden and Norway, but is most plentiful in the northern portions during the breeding-season. It breeds in abundance all over Lapland and Northern Russia; and in the migrations is more or less common in all the countries of Europe, as well as of Northern Africa. It is included in the list of the birds of Asia, and is found in various parts of India, China, and Japan.

According to Yarrell, the Teal bears confinement well; and in the gardens of the Zoological Society of London, though restricted to a very small pond, with a margin of high and thick grass and some low shrubs, it has bred regularly for several seasons in succession. The eggs are white, tinged with buff, measuring 1.75 inches in length by 1.34 in breadth.

The food of the Teal in its wild state consists of seeds, grasses, roots, water-plants, and various insects; but in confinement it is best fed with grain. It breeds in the long rushy herbage about the edges of lakes, or in the boggy parts of the upland moors; its nest, according to Selby, being formed of a large mass of decayed vegetable matter, with a lining of down and feathers, upon which eight or ten eggs usually rest — these in some instances, however, numbering as many as fifteen. In the cultivated regions of Lapland, where the Teal is very common, it breeds in all the mossy fields and bogs.

Mr. Vernon Harcourt found it in Madeira; and in the Azores Mr. Godman reports it as quite common, a few pairs breeding in the Island of Flores. It also occurs at Teneriffe and in the Canaries. A few of this species are supposed to breed in France and in the northern portions of Greece; and Captain Shelley is confident that this bird breeds even in Egypt and Nubia. It occurs in Siberia as far to the east as Kamtschatka.

According to the observations of Mr. Dresser, the Teal is more especially a fresh-water Duck, its presence on the salt water being something exceptional. In the daytime it frequents ponds, pools, or sheets of water in marshy countries, where the rank growth of flags or rushes affords it a shelter, and either sits motionless on the banks, or floats on the surface of the water. Toward the close of the day it becomes restless, and with the first shades of evening goes in quest of food, being essentially a night-feeding bird. In disposition it is gentle and affectionate, often evincing a fatal unwillingness to leave its wounded mate. The parent birds are always very solicitous about the safety of their young. Mr. St. John once overtook an old Teal with eight newly-hatched young ones crossing his path; he got off his horse, lifted the little ones up, and carried them a short distance down the road to a ditch, the old bird constantly fluttering about him, within reach of his riding-whip.

According to Naumann, the Teal visits during the day the shallow shores among the weeds, in morasses or shallow pools, the bottoms of which it can reach without diving, frequenting in preference small pools, flooded meadows, marshes, and marshy ponds, and the swampy green shores of small streams. Toward evening it flies restlessly from pool to pool, hunting after worms or grain, and feeding on barley, oats, or the seeds of several species of *Panicum*. This bird is particularly fond of the seeds of certain rushes and grasses, and it visits the places where these grow in abundance, remaining there all night, and fattening on this nourishing food, so that its flesh becomes very delicate. While swimming on the water it may often be seen carefully picking up small articles of food, with neck and head held down or pushed forward. It feeds on all sorts of small worms, larvæ, water-insects, small fresh-water shellfish, shoots of tender plants, seeds of many water-plants, and, very rarely, on spawn or tadpoles.

Mr. Dresser repeatedly procured the nests of this species in Northern Finland, where he found them on the ground, among the grass and usually under some low bush, by which they were concealed, often at a considerable distance from the water. The eggs — usually from eight to ten in number — are described as being oval in shape, measuring 1.77 inches in length by 1.30 in breadth, and pale yellowish-white in color. Only the females incubate; but during the breeding-season the males are never very far distant from the sitting female. When the young are hatched, both male and female appear to be equally unremitting in their attention to them.

GENUS **AIX**, BOIE.

Aix, BOIE, Isis, 1828, 329 (type, *Anas galericulata*, LINN.).
Dendronessa, SWAINS. F. B. A. II. 1831, 446 (type, *Anas sponsa*, LINN.).
Lampronessa, WAGL. Isis, 1832, 282 (type, *Anas sponsa*, LINN.).

CHAR. Bill small, much shorter than the head, all the lateral outlines gradually converging toward the end, the nail very large, broad, and prominent, forming the tip of the bill; lamellæ completely hidden. Adult male with the head crested, the colors rich and varied, and the markings elegant, tertials exceedingly broad, truncate.

The above characters are framed so as to include the Chinese Mandarin Duck (*Aix galericulata*),[1] the only species closely related to our Wood Duck (*A. sponsa*). This Duck is quite similar to the American species in style of coloration and in general appearance, but differs in so many points of external anatomy as to render it extremely doubtful whether the two species should be kept together in the same genus. They differ in form as follows: —

A. galericulata. Feathering at the base of the maxilla extending farther forward on the side of the forehead than at the rictus, and forming a straight line between these two points; depth of the bill through the base about equal to its width. Feathers of the sides of the neck much elongated, forming a conspicuous ruff of soft, narrow feathers; inner tertial with the shaft much bent, giving to the outer web a falcate form, the inner web widened into an excessively broad, fan-like, or sail-like ornament. Tail short; the rectrices shorter than the lower coverts, much longer than the upper. (*Aix*, BOIE.)

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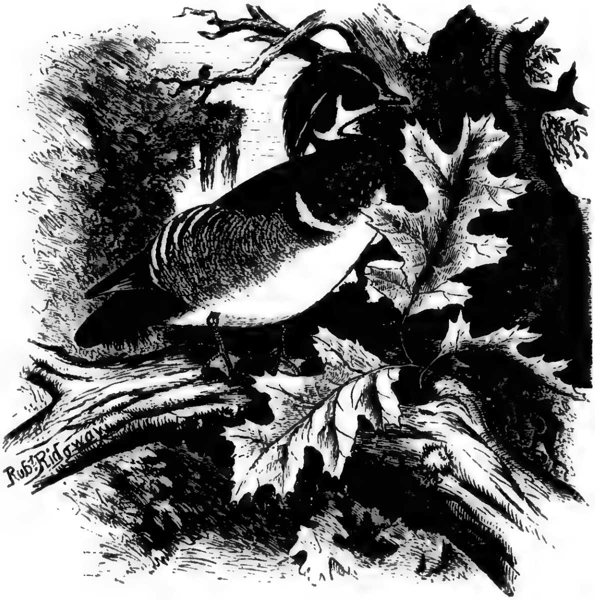
[1] AIX GALERICULATA. The Mandarin Duck.
Anas galericulata, LINN. S. N. ed. 10, I. 1758, 128; ed. 12, I. 1766, 206.
Aix galericulata, BOIE, Isis, 1828, 329. — GRAY, Handl. III. 1871, 80, no. 10627.

A. sponsa. Feathering at the base of the maxilla extending much farther forward at the rictus than at the sides of the forehead, and forming a gently curved (convex) line between these points; depth of the bill at the base much greater than the width, the upper base of the maxilla forming a deep angle extending a considerable distance on each side of the forehead; feathers of the side of the head and neck short and velvety; inner tertial of normal form, the shaft straight. Tail long (half as long as the wing), vaulted, graduated, the feathers very broad, and extending far beyond the coverts. (*Dendronessa,* SWAINSON.)

The nearest ally of *Aix,* so far as structure is concerned, in America, is the genus *Cairina,* represented by the well-known Muscovy Duck (*C. moschata*); but this differs in many important particulars, chief among which are the very large stature and marked discrepancy in size between the sexes, and the brownish fleshy caruncles on the forehead and lores. The points of similarity are numerous, however, the tail being long, broad, graduated, and somewhat vaulted, the nail of the bill very large and broad, the nostrils large and open, the head crested, etc. Among the peculiarities of *Cairina,* as distinguished from other American genera, are the naked and caruncled face, the extremely lengthened secondaries, and relatively short greater wing-coverts.



A. sponsa.

Aix sponsa.

THE WOOD DUCK; SUMMER DUCK.

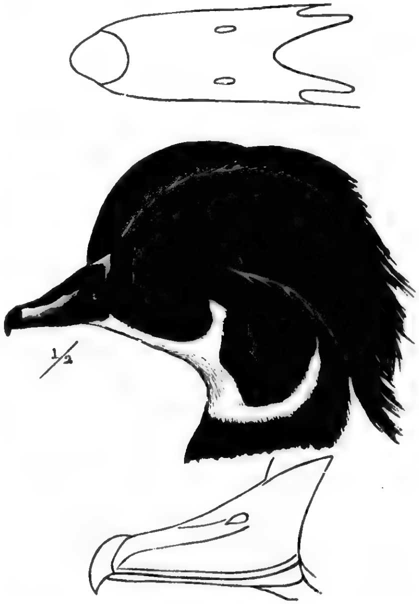
Anas sponsa, LINN. S. N. ed. 10, I. 1758, 128; ed. 12, I. 1766, 207. — WILS. Am. Orn. VIII. 1814, 97, pl. 70, f. 3. — NUTT. Man. II. 1834, 394. — AUD. Orn. Biog. III. 1835, 52; V. 1839, 618, pl. 206; Synop. 1839, 280; B. Am. VI. 1843, 271, pl. 391.

Aix sponsa, BOIE, Isis, 1826, 329. — BAIRD, B. N. Am. 1858, 785; Cat. N. Am. B. 1859, no. 587. — COUES, Key, 1872, 288; Check List, 1873, no. 499; 2d ed. 1882, no. 719; B. N. W. 1874, 571. — RIDGW. Nom. N. Am. B. 1881, no. 613.

Dendronessa sponsa, SW. & RICH. F. B. A. II. 1831, 446.

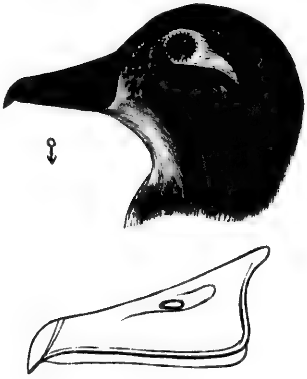
HAB. Whole of temperate North America, north to the Fur Countries; breeding throughout its range. Cuba. Accidental in Europe.

SP. CHAR. *Adult male:* Chin, throat, and foreneck pure white, sending off laterally two branches, — the first across the cheeks, back of, and nearly to, the posterior angle of the eye, the second across the lower part of the neck, almost to the nape; both bars tapering toward the end, and somewhat curved or falcate in shape; a narrow white line begins at the point of the maxillary angle, and is continued back on each side of the crown, widening considerably on the side of the crest; a second white line commences about half an inch behind the eye, and nearly the same distance above the end of the white cheek-bar, and follows the lower edge of the crest, where considerably wider than anteriorly; remainder of the head silky metallic green, violet, and purple, as follows: cheeks and space behind the white cheek bar soft violaceous-black, in the latter region extending up to the lower white stripe, but in the anterior area bounded above and anteriorly by dark metallic green, the orbital region and anterior half of the crest between the white lines metallic-reddish purple; forehead, crown, and posterior portion of the crest metallic green; terminal portion of the crest, above, laterally, and beneath, dark metallic violet. Jugulum rich purplish chestnut, with a metallic-purple gloss laterally, the front and lower part marked with deltoid spots of white, growing larger toward the breast; breast and abdomen immaculate white; sides of the breast with a broad white transverse bar, and a wide black one immediately behind it; sides and flanks pale fulvous buff, delicately undulated with black, the broad feathers forming the upper border each beautifully marked with two black crescentic bars, inclosing a white one; crissum dull black, fading gradually into dull rusty fulvous on the anal region. Back, lesser wing-coverts, and rump dark slaty brownish, very faintly glossed with bronze, the wing-coverts more slaty, the rump much darker, and gradually deepening into black toward the upper tail-coverts, which, with the tail, are deep black, the latter with bronze-green reflection in certain lights; a somewhat ovate patch (pointed posteriorly) of rich dark metallic maroon-purple on each side of the rump, immediately behind the flanks; just behind this, the two or three elongated lateral upper tail-coverts



Male.

are marked with a central stripe of deep fulvous, falling gracefully over the sides of the crissum. Tertials and posterior scapulars intense black, with rich velvety reflections of blue, green, and purple (chiefly the first), in certain lights; the longest tertial tipped with a wide bar of white, the next black to the end, the third much shorter, much narrower than the rest, pointed, and of a dull greenish-bronze color;[1] middle and greater wing-coverts steel-blue, narrowly tipped with black; secondaries ("speculum") purplish steel-blue, narrowly tipped with white, and with a narrow subterminal black bar; primary coverts slate-color; primaries with the exposed ends of the inner webs steel-blue, the ends of the outer webs grayish or glaucous-white, becoming slate-color basally; lining of the wing spotted with slate-color and white. Sagittate longitudinal space on the culmen and terminal "nail" of the bill deep polished black; an oblong space of milk-white from nostril to the "nail;" a line or border of gamboge-yellow following the basal outline of the bill; rest of bill dark purplish red, deepening into scarlet just behind the nostril. Iris bright orange-red; eyelids deep vermilion; legs and feet dull chrome-yellow, the webs and joints dusky.[2] Total length, about 19.00 inches; extent, 29.00; wing, 9.00-9.50; culmen, 1.40; tarsus, 1.40; middle toe, 1.70. *Adult female:* Feathers bordering the base of the bill all round, a space on side of the head surrounding the eyes and extending back in a point toward the occiput, chin, and whole throat white; remainder of the head plumbeous-gray, the crown and slight occipital crest glossed with metallic green; jugulum brownish, the feathers marked centrally with fulvous-buff, those toward the breast tipped with white; remaining lower parts white, the crissum freckled with dusky grayish, the sides and flanks raw-umber brown, spotted with brownish-white; back, rump, and upper tail-coverts hair-brown, glossed, in certain lights, with bronze and reddish purple; tail brightly glossed with greenish bronze; scapulars and tertials olivaceous-umber, richly glossed with reddish purple and bronze; wings as in the adult male, but secondaries more widely tipped with white, and the four upper greater-coverts rich metallic reddish purple, more bluish in the centre, bronzy toward the edge and base, and narrowly tipped with velvety black. Bill dark plumbeous, the nail and longitudinal space on the culmen black; eyelids chrome-yellow; iris raw-sienna; legs and feet yellowish brown.[3] Total length, about 17.75 inches; extent, 28.00; wing, 8.50; culmen, 1.30; tarsus, 1.35; middle toe, 1.60. *Downy young:* Above, deep hair-brown, darker, or clove-brown, on the pileum and tail; a dingy whitish bar along the posterior border of the arm-wing, and a roundish spot of the same on each side of the rump. Lores, superciliary stripe extending back nearly to the occiput, with lateral and under parts of the head generally, bright sulphury-buff, crossed by a wide stripe of blackish brown extending from the occiput forward to the eye; remaining lower parts dingy white, the sides brownish, this crossed on the flanks by an indistinct whitish bar.[4]



Female.

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[1] There is in this species a very strange and probably altogether peculiar arrangement of the tertials, longer scapulars, and inner secondaries, both as to form and colors. The exposed surface of the first appears continuously intense black, as described above; but upon lifting the feathers it is seen that between each two there is a concealed one of different form and color — narrow and pointed, instead of broad and nearly truncated, and dull bronzy, instead of deep black. Of these bronzy feathers, only the last (or the longest scapular) has its tip exposed; the innermost secondary is the longest, and is entirely intense black to the tip; the next is very much (nearly an inch) shorter, entirely concealed, and also wholly black; the third is little, if any, shorter than the first, but is marked at the end by a broad bar of pure white; the fourth is a little shorter, without any white at the tip, and the outer web chiefly reddish purple; this, like the third, has the outer web much widened terminally.

[2] Fresh colors of a specimen killed October 19, at Mount Carmel, Ill.

[3] Fresh colors of a specimen killed October 14, at Mount Carmel, Ill.

[4] Described from No. 84725, obtained at Mount Carmel, Ill., July 17, 1871; R. RIDGWAY, coll.

The Wood or Summer Duck is by far the most beautiful and graceful of all the North American *Anatidæ*, and indeed has no superior in any water. It is widely distributed over the North American continent from Southern Mexico to Hudson's Bay, and from the Atlantic to the Pacific coast. It breeds abundantly from Texas to the British Provinces.

Richardson states that the Wood Duck is quite rare in the Fur Countries, and is never found farther north than the 54th parallel. Mr. Murray, however, mentions finding it on the western side of Hudson's Bay, in a locality some six degrees farther north than this limit. It is, however, very rare north of latitude 50°. Mr. Kennicott mentions meeting with several small flocks of this species, in the latter part of September, north of the Red River, in Minnesota. They were feeding on the wild rice, in company with immense flocks of Mallards, Widgeon, and Teal. Mr. J. A. Allen met with this species in Northwestern Kansas, in May, in the neighborhood of Fort Hays, and he afterward found it quite numerous in the valley of Salt Lake in Utah. A single specimen only — a female — is recorded by Major Wedderburn as having been taken in Bermuda, in December, 1846.

According to the observations of Dr. Cooper, the Wood Duck is abundant in California, and is a resident throughout the winter in the lower districts. It migrates, in April, toward the north, and returns southward in October. Dr. Cooper is not sure that any go to the extreme southern part of that State, having never met with any there, but infers it as probable, inasmuch as they extend their migrations on the eastern coast as far south as the Gulf of Mexico. According to Mr. Dresser, the Wood Duck is not merely a migratory visitor to Southern Texas, but is a resident, and not uncommon, near San Antonio during the summer. He obtained a fine male on the San Pedro, April 23, 1864, and one at Fort Stockton, April 19. According to Mr. Lawrence, Colonel Abert met with this species near Mazatlan, in Western Mexico. It is quite common in all the British Provinces, in New England, and probably in nearly all parts of the Union, even to Florida. It is given by Dr. Gundlach as resident in and breeding in Cuba. Mr. McIlwraith speaks of it as abundant near Hamilton, C. W., and in the West generally, and breeding all over the country.

In Long Island, according to Giraud, the Wood Duck is very seldom seen on the open bay, preferring the still ponds and shady creeks, where it finds an abundant supply of its favorite food, which consists chiefly of insects, seeds, and leaves of plants. In the fall it feeds freely on acorns, with which its stomach is often found to be stuffed full. It is known as the Summer Duck from its remaining through that season, and the Wood Duck by others, because it frequents wooded regions, and breeds in the hollow of trees. Its beautiful plumage and its quiet and gentle character make it quite a favorite in many parts of the country; and it is not unusual for persons residing in suitable situations to invite its presence by preparing boxes and other convenient places for it to nest in. The Wood Duck usually keeps in small parties, and moves about in pairs. It was formerly frequently taken in nets, and sent to market; but this exterminating process is now discouraged, and in many States is forbidden by law.

According to Wilson, the Wood Duck winters as far north as Virginia, and he states that he has met with individuals near Petersburg in January. In Pennsylvania the female is said to begin to lay late in April, almost invariably in the hollows of trees, sometimes on a broken branch. Wilson says that this bird occasionally constructs its own nest of sticks — a statement not accepted by Audubon. It is not improbable that — like some other Ducks — this species may make use of the deserted nest of a Crow or a Hawk.

Wilson narrates that on the 18th of May he visited a tree containing a nest of a Summer Duck, on the banks of Tuckahoe River, New Jersey. This tree stood on a declivity twenty yards from the water; and in its hollow and broken top, about six feet down, on the soft decayed wood, were thirteen eggs covered with down from the mother's breast. The eggs were of an exact oval shape, the surface finely polished and fine grained, of a yellowish color, resembling old polished ivory, and measured 2.12 by 1.50 inches. This tree had been occupied by the same pair, during the breeding-time, for four successive years. Wilson's informant, who lived within twenty yards of the tree, had seen the female, the spring preceding, carry down thirteen young, one by one, in less than ten minutes. She caught them in her bill by the wing or the back of the neck, and landed them safely at the foot of the tree, and finally led them to the water. In evidence of the unwillingness of this species to abandon its breeding-place, Wilson mentions that under this tree a large sloop lay on the stocks, its deck not more than ten feet distant from the nest. Notwithstanding the presence and noise of the workmen, the Ducks would not abandon their old home, but continued to pass out and in, as if no person were near. While the female was laying, and afterward, when she was sitting, the male usually perched on an adjoining limb, and kept watch. The common note of the drake was *peet-peet*, and when, standing sentinel, he apprehended danger, he made a noise not unlike the crowing of a young cock, *oe-eek*.

The Wood Duck has been repeatedly tamed and partially domesticated, and of this statement there are many well-attested cases on record. My own attempts to effect this, however, have been unsuccessful, the old birds remaining wild, and not breeding. Wilson was informed of an instance where a resident near Gunpowder Creek had a yard swarming with Wood Ducks which were completely domesticated. Audubon also gives an interesting account of his attempts to tame and domesticate this Duck, in which he so far succeeded that the birds bred within his grounds, in boxes. The wild ducklings when taken were put in the bottom of empty flour-barrels; but he soon found that they could raise themselves from the bottom to the brim by moving a few inches at a time up the side, lifting foot after foot, by means of their diminutive hooked claws, when they would tumble over, and run in every direction. They fed freely on corn-meal soaked in water, and, as they grew, caught flies with great expertness.

The Wood Duck is conspicuous for the swiftness, ease, and elegance of its flight. It can pass through woods, and among the branches of trees, with as much facility as the Wild Pigeon. While flying it is rarely ever heard to utter any cry.

Audubon states that this Duck usually pairs about the first of March in Louisiana, but sometimes a fortnight earlier. He has never known one to nest either on the ground or in the branches of trees. For three successive years a pair near Henderson, Ky., occupied the abandoned hole of an Ivory-billed Woodpecker. The eggs were from six to fifteen in number, according to the age of the bird, and were placed on dry plants, feathers, and a scanty portion of down from the breast of the female. He also states that the latter is abandoned by the male as soon as she begins to incubate. This, however, is not in accordance with the statement of Wilson, and probably is not correct. In most of the nests examined by Audubon there were found quantities of feathers belonging to other species, including the Domestic Fowl, Wild Geese, and Turkeys. At an early age the young answer to the call of their parent with a mellow *pee-pee-pee*, often repeated. The cry of the mother is soft, low, and prolonged, resembling the syllables *pēē-ēē*.

In the summer of 1867 Mr. Boardman, of St. Stephen — as he informs me — was told of some Ducks which had a nest in a hollow in a high tree, and which were continually fighting. This having been noticed for several days, his curiosity was aroused, and he visited the locality, and became an eye-witness of a singular contest between a female Wood Duck and a Hooded Merganser. They were evidently contending for the possession of this nest, and neither would allow the other peaceful possession. The nest was found to contain eighteen eggs, two thirds of which were those of the Wood Duck. They were all fresh, as neither had been able to sit. Which was the original occupant and which the intruder, it was not possible to ascertain.

Professor Kumlien informs me that this species, still common in Wisconsin, occasionally breeds at a considerable distance from the water. One pair nested for a number of years in a burr-oak in a thicket about three quarters of a mile from the nearest water. The tree was very high, and the nest was also far from the ground. According to his observations, this Duck uses plenty of down in its nest.

The eggs of the Wood Duck are of a rounded oval shape, of a clear ivory-white color when unsoiled, and measure from 2.05 to 2.10 inches in length by 1.55 in breadth.

GENUS **FULIGULA**, STEPHENS.[1]

Branta, BOIE, Isis, 1822, 564 (type, *Anas rufina*, PALL.) ; not of SCOPOLI, 1769.
Fuligula, STEPHENS, Gen. Zool. XII. 1824, 187 (type, *Anas rufina*, PALL.).
Netta, KAUP, Nat. Syst. 1829, 102 (same type).
Callichen, BREHM, Vög. Deutschl. 1831, 921 (same type).
Mergoides, EYTON, Cat. Brit. B. 1836, 57 (same type).

CHAR. Similar to *Fulix*, but the bill decidedly broader at the base than at any other part, gradually narrowing toward the end, which has a large and very broad nail ; maxilla very much depressed terminally, its depth at the base of the nail being only about one fourth that at the extreme base. Male with the head rufous, the pileum ornamented with a very full, soft tuft or bushy crest, occupying the whole top of the head.

Fuligula rufina.

THE RUFOUS-CRESTED DUCK.

Anas rufina, PALL. It. II. App. 1773, 731, no. 28. — GMEL. S. N. I. 1788, 541.
Branta rufina, BOIE, Isis, 1822, 564. — GRAY, Cat. Brit. B. 1863, 198.
Fuligula rufina, STEPH. Gen. Zool. XII. 1824, 188. — DRESSER, B. Eur. Pt. XXII. Oct. 1873.
Netta rufina, KAUP, Nat. Syst. 1829, 102.
Platypus rufinus, BREHM, Vög. Deutschl. 1831, 922.
Callichen rufinus, BREHM, t. c. 924.
Mergoides rufina, EYT. Rar. Brit. B. 1836, 57.
Aythya rufina, MACGILL. Man. Brit. B. 1846, 191.
Callichen ruficeps, BREHM, t. c. 922.

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[1] Some recent authorities have used the generic term *Fuligula* for the entire group of lobe-halluxed River-Ducks, or those which have usually been assigned to the genera *Fuligula*, *Fulix*, and *Æthyia*. But *Anas rufina*, PALL., upon which the genus *Fuligula* of Stephens was based, is quite a different type from *Fulix* (formally restricted to *F. marila* and its allies by Professor Baird, in 1858) and *Æthyia*, and should, in our opinion, be separated generically. The first use of the term *Branta* in a generic sense was by Scopoli in 1769 (for *Anser bernicla*, L., *A. moschata*, L., *A. torrita*, L., *A. albifrons*, L. — a very heterogeneous assemblage), which invalidates its subsequent employment, unless restricted to one or another of the species named by Scopoli not already supplied with a generic name — with which, however, there appears to be none not provided.

Callichen subrufinus, BREHM, t. c. 924.
Callichen micropus, BREHM, t. c. 925.
Callichen rufescens, BREHM, Vogelfang, 1855, 379.
Red-crested Pochard, SELBY, Brit. Orn. II. 350. — DRESSER, *l. c.*
Red-crested Whistling Duck, YARRELL, Brit. B. ed. 2, III. 327, fig.; ed. 3. III. 329, fig. — GRAY, *l. c.*

HAB. Southern and Eastern Europe, Northern Africa, and India; occasional in Northern and Central Europe, and casual in the British Islands; accidental in Eastern U. S. (New York market, BOARDMAN; spec. in U. S. Nat. Mus.).

SP. CHAR. *Adult* ♂ (57207, U. S. Nat. Mus.; Hungary, W. SCHLÜTER): Head and upper half of the neck delicate pinkish cinnamon, or vinaceous-rufous, the full, soft crest (occupying the entire pileum) paler and less reddish, the feathers light buff at tips; lower half of the neck (including a narrow stripe which extends up the nape to the occiput), jugulum, breast, abdomen, anal region, crissum, upper tail-coverts, and rump brownish black, deepest on the neck and jugulum, and with a decided dark-green gloss on the upper tail-coverts. Back and scapulars uniform light umber-drab or isabella-color; wing-coverts and tertials brownish gray; speculum white basally, changing gradually into pale grayish, then succeeded by a rather broad subterminal bar of dusky, the tip narrowly and abruptly white; four outer primaries with exterior tips dusky; inner quills pale ashy, with broad dusky ends; tail dull dark grayish. A broad bar or transverse patch across anterior scapular region, anterior border of the wing, lining of the wing, axillars, and a very large patch covering the flanks and posterior half of the sides, pure white. "Bill bright vermilion-red, the tip white; irides reddish brown; legs orange-red. Total length, 21 inches." (DRESSER, B. Eur. Pt. XXII.) Wing, 10.20 inches; culmen, 2.00; tarsus, 1.50; middle toe, 2.25.

Adult ♀ (57209, U. S. Nat. Mus.; Hungary, W. SCHLÜTER): Crest much less developed than in the male, light hair-brown, this color descending to the level of the lower border of the eye, and posteriorly continuing in a narrow stripe down the nape; rest of the head and neck very pale ashy, as are also the lower parts in general; jugulum, sides, and flanks light raw-umber brown, the tips of the feathers lighter; anal region and crissum uniform light drab, the latter whitish terminally. Upper parts in general umber-drab (the wings being more brownish than in the ♂), darker on the rump; white patch at base of scapular region wholly obsolete, and white border to the wing indistinct; speculum pale ashy, becoming gradually dull white basally, and brownish dusky subterminally, and with a narrow white terminal margin as in the ♂. "Eyes hazel; beak blackish, with a pink tip, a portion of the lower mandible being yellowish pink; legs and feet pinkish, webs blackish." (DRESSER, *l. c.*) Wing, 9.90; culmen, 1.90; tarsus, 1.50; middle toe, 2.20.

Immature ♂ (61957, U. S. Nat. Mus.; vicinity of New York City, February, 1872, G. A. BOARDMAN): Similar in general appearance to the adult ♀, as described above, but crest much less developed (the tips of the feathers much worn) and decidedly more reddish in color; sides and under parts of head thickly interspersed with cinnamon-colored feathers (new moult); the jugulum, breast, and posterior under parts also mixed with black feathers, indicating the approaching adult livery; white patch at base of scapular region plainly indicated, and broad white border to anterior portion of the wing very distinct; speculum much as in the ♀, lacking the distinct subterminal dusky bar of the adult ♂. Wing, 9.80 inches; culmen, 1.80; tarsus, 1.50; middle toe, 2.15.

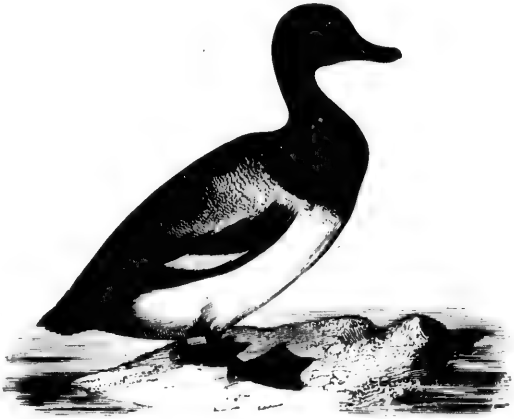
"*Young in down* (*fide* BALDAMUS, Cab. Journ. 1870, 280): Differs from every other Duck in this plumage that I know in having a double olive-gray stripe from the lores, dividing before the eye, and bordering the yellowish-gray eyebrow above and the cheeks and auriculars below; upper parts, crown from the base of the bill, nape, back, and wings dull olive-gray, excepting the spot on the shoulder, which, with the rest of the body, is pale yellowish gray; iris dark brown; bill reddish brown, with the nail white; feet ash-gray, with a greenish tinge, webs and toes narrowly edged with yellowish white." (DRESSER, *l. c.*)

The only claim which this handsome species has to a place among North American birds rests on a single individual having been obtained in Fulton Market, New York, the 2d of February, 1872, by Mr. George A. Boardman. The specimen in question, a young male, was undoubtedly shot near New York City, probably on Long Island Sound, and is now preserved in the U. S. National Museum. (Cf. Proc. U. S. Nat. Mus., Vol. IV., 1881, pp. 22–24.)

GENUS **FULIX**, SUNDEVALL.

Fulix, SUNDEV. Kong. Vet. Ak. Hand. 1835, 129. (No type designated, but restricted to the group of which *Anas marila*, LINN., is typical, by Professor BAIRD in B. N. Am. 1858, 790.)
Fuligula, AUCT. (nec STEPHENS, 1824).
Marila, BONAP. Compt. Rend. XLIII. Sept. 1856, 651. (Not of REICHENBACH, 1852.)
Nettarion, BAIRD, B. N. Am. 1858, 790 (in text), (type, *Anas marila*, LINN.).

CHAR. Bill longer than the tarsus (about as long as the head), very broad and much depressed for the terminal half, the edges nearly parallel or slightly divergent terminally; lower edge of the maxilla strongly convex, concealing all of the mandible except the basal portion. Colors chiefly black and white (the head, neck, and jugulum black, lower parts white) in the adult male the black replaced by brownish in the female.



F. marila, male.

This genus, as restricted, embraces three North American and one European species, whose characters are as follows: —

A. Speculum white, tipped with black; sides and flanks plain white, or very minutely undulated with grayish.
   1. **F. marila**. Occiput not crested; back and scapulars grayish white in the male, undulated with black. Wing, 8.25–9.00 inches;[1] bill, 1.85–2.20 × .85–1.05 × .70–.90; tarsus, 1.40–1.60; middle toe, 2.25–2.45. *Hab.* North America.
   2. **F. affinis**. Similar to *F. marila*, but smaller. Wing, 7.60–8.25 inches; bill, 1.58–1.90 × .80–.95 × .60–.80; tarsus, 1.15–1.50; middle toe, 2.00–2.25. *Hab.* North America.

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[1] The *average* dimensions of the two are as follows: —

F. marila: Wing, 8.59 inches; culmen, 2.02; width of bill, near end, .97, at base, .79; tarsus, 1.51; middle toe, 2.32. (17 specimens.)

F. affinis: Wing, 7.80 inches; culmen, 1.75; width of bill, near end, .88, at base, .69; tarsus, 1.38; middle toe. 2.14. (20 specimens.)

3. **F. fuligula.**[1] Occiput with a long, pendant, but closely appressed, crest; back and scapulars plain black. Wing, 7.60–8.10 inches; bill, 1.85–1.90 × .75–.85 × .55–.65; tarsus, 1.25–1.30; middle toe, 2.05–2.10; *Hab.* Palæarctic Region; accidental in Greenland ?

B. Speculum bluish gray, narrowly tipped with white; sides and flanks grayish white, very distinctly undulated with blackish.

4. **F. collaris.** Occiput without crest; back and scapulars plain black; lower neck with a more or less distinct collar of chestnut or dark reddish brown; chin with a triangular white spot.

Fulix marila.

THE SCAUP DUCK; BIG BLACK-HEAD OR BLUE-BILL.

Le Millouinan, Buff. Pl. Enl. 1002 (♂ ad.).

Anas marila, Linn. Faun. Suec. 2d ed. 1761, 39; S. N. ed. 12, I. 1766, 196. — ? Wils. Am. Orn. VIII. 1814, 84, pl. 69, fig. 3 (may be *F. affinis*).

Fuligula marila, Stephens, Shaw's Gen. Zool. XII. ii. 1824, 198. — Sw. & Rich. F. B. A. II. 1831, 453 (part; includes *F. affinis*). — Nutt. Man. II. 1834, 437 (do.). — Aud. B. Am. VII. 1843, 355, pl. 498 (not of VI. 1843, 316, pl. 397, nor of his earlier works, which = *F. affinis*). — Coues, Key, 1872, 289; Check List, 1873, no. 500; 2d ed. 1882, no. 720; Birds N. W. 1874, 573.

Fulix marila, Baird, B. N. Am. 1858, 791; Cat. N. Am. B. 1859, no. 588. — Ridgw. Nom. N. Am. B. 1881, no. 614.

Anas frenata, Sparrm. Mus. Carls. 1786, pl. 38.

Fuligula Gesneri, Eyton, Cat. Br. B. 1836, 58.

Hab. Entire northern hemisphere; in America, breeding far north.

Sp. Char. Head, neck, and jugulum black, the first with a greenish gloss; back and scapulars white, irregularly undulated with zigzag lines of black; wing-coverts dusky, finely grizzled with grayish white; secondaries white, tipped, and sometimes narrowly edged with black; tertials black, with a very faint bottle-green reflection; primary-coverts dusky black; primaries similar, but the inner quills pale grayish on outer webs, except at ends, the gray growing whiter on the shorter feathers; rump, upper tail-coverts, tail, and crissum, dull black. Lower parts between the jugulum and crissum white, the posterior portion (and sometimes the sides and flanks), zigzagged with dusky. Bill pale blue (or bluish white) in life, the nail black; iris bright yellow; legs and feet pale slate. *Adult female:* Head and neck sepia-brown, the anterior portion of the former, all round the base of the bill, white; jugulum, anal region, and crissum, pale grayish brown, fading gradually into the white of the breast and abdomen; sides and flanks deeper brown; above, brownish dusky, the back and scapulars but faintly or not at all grizzled with white; wings much as in the male.

Total length, about 18 to 20 inches; extent, 29.50 to 35.00; wing, 8.25–9.00; culmen, 1.85–2.20; width of bill near end, .85–1.05, at base, .70–.90; tarsus, 1.40–1.60; middle toe, 2.25–2.45.

[1] Fulix fuligula. The European Crested Duck.

Le Morillon, Buff. Pl. Enl. 1001 (♂ ad.).

Anas fuligula, Linn. S. N. ed. 10, I. 1758, 128; ed. 12, I. 1766, 202. — Naum. Vög. Deutschl. XII. 1844, 64, pl. 310.

Anas scandiaca, Gmel. S. N. I. 1788, 520.

Anas cristata, Leach, Syst. Cat. 1816, 39.

Fuligula cristata, Steph. Gen. Zool. XII. 1824, 190. — Bonap. Comp. List. 1838, 58. — Keys. & Blas. Wirb. Eur. 87. — Macgill. Man. II. 189. — Gray, Gen. B. III. 621; Cat. Brit. B. 1863, 199.

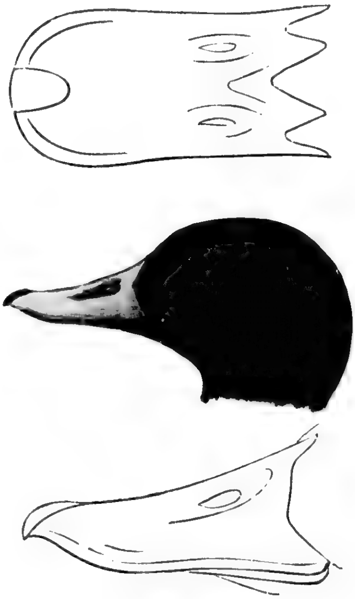
Anas colymbis, Pall. Zoog. Rosso-As. II. 1826, 266.

Tufted Duck, Yarr. Brit. B. ed. 2, III. 351, fig.; ed. 3, III. 353, fig.; et Auct.

Sp. Char. *Adult male:* Head and neck glossy black, showing purple and green reflections in certain lights; pendant occipital crest, and lower part of neck (forming indistinct collar) brownish; upper parts in general, jugulum, breast, and crissum brownish black, the back and scapulars minutely freckled with grayish. Speculum white, widely tipped with black; primaries light brownish gray, their ends, with entire outer web of two outer quills, blackish. Entire abdomen, sides, and flanks, immaculate white.

The "Scaup Duck" of Great Britain — the "Blue-bill" of New England, the "Black-head" of Long Island and Chesapeake Bay — is one of the most abundant and one of the most widely distributed of its tribe. In North America it occurs on the Atlantic coast, the interior waters, and on the Pacific. In the latter it is found from Alaska to Central America, in the interior from the Barren Grounds to the Gulf of Mexico, and on the east from Greenland and Hudson's Bay to Florida and the West India Islands. It is found throughout Europe and Asia as far east as China and Japan. It does not appear to move farther south than the north shore of the Mediterranean, and is more northern than most of the fresh-water Ducks.

Dr. Walker mentions having obtained several specimens of this Duck near Godthaab, on the coast of Greenland, and Professor Reinhardt states that two adult males and a female of this species were sent to Denmark from Nenortalik in 1860. Mr. Ross met with this bird on Great Slave Lake, and Captain Blakiston obtained specimens of it on Hudson's Bay. In the territory of the Hudson's Bay Company, as Mr. Kennicott states, it is known by the *voyageurs* as the "Big Fall Duck" (*Gros Canard d'Automne*). It was rather rare on the Yukon, but more common about the Slave Lake. Although abundant on the west coast, the main body appears to pass to the northeastward, although not going so far east as the Dusky Duck and the Red-head. It was supposed by Mr. Kennicott to breed more toward Hudson's Bay; and he found its general habits to be very similar to those of the *Fulix affinis*, with which it associates. It was ascertained to be abundant at Sitka, where it was obtained by Mr. Bischoff. Mr. Dall found it common on the Lower Yukon and on the sea-coast, where it was one of the first of the Ducks to arrive in the spring; and he obtained its eggs near the mouth of the Yukon in the early part of June. He speaks of its nest as being very rude — a mere excavation, with a few straws about it — and of the bird as usually tough and lean, and but poor eating. This Duck was found by Mr. R. Browne on the coast of Vancouver Island, and Richardson states that it breeds in all parts of the Fur Countries, from the 50th parallel to the most northern limits.



Male.

According to Dr. Cooper, this Duck, variously known as the "Broad-bill," the "Blue-bill," and the "Shuffler," is common during the winter along the entire coast of California, frequenting the salt bays and creeks, and occasionally going a short distance up the more open rivers, in fresh water. It is said to feed on small shell-fish, crustacea, etc., for which it dives a good deal in very deep water, both by night and day. Its stay in California is from October until April, when it leaves for the Arctic Regions to breed. It utters a grunting noise, and occasionally a guttural quack.

This Duck has been tamed and made to feed on barley; but in California it is deemed an inferior bird for the table.

Colonel Grayson mentions meeting with it in Western Mexico, near Mazatlan, during the winter months. Mr. Dresser found it common throughout the winter in Southwestern Texas and Northern Mexico. It occurs in several of the West India Islands; in Cuba, according to Dr. Gundlach; and in Trinidad, on the authority of Léotaud. In the latter place it is a frequent but not a very regular visitant, arriving usually in November, and departing in April, generally in small flocks of five or six individuals only. Its flesh is not of the first quality.

Dr. Bryant states that this species is common during the winter in the Bahamas, and that it is sometimes seen in immense flocks, acres in extent.

Mr. Swinhoe includes it in his List of the Birds of Formosa, and met with it near Amoy, in China. It was also observed in Japan by Mr. H. Whitely, who met with it in May near Hakodadi.

In Europe it is regarded as a decidedly northern species, not breeding south of Lapland. Mr. Wheelwright found it very common at Quickiock, in the lowlands and fell meadows. The eggs were said greatly to resemble those of the Pintail in color, but to be larger and thicker. In Iceland Mr. C. W. Shepard found it on an island in the Lake of Mý-vatn, in the northern part. Although a great many other Ducks were breeding in and about this lake, only one other, the *Harelda glacialis*, occupied this island. Most of the birds left their nests as soon as the boat touched the shore, but a few remained, and would not leave until they were driven away. He found two Ducks, one of them of this species, the other a *Harelda*, sitting on the same nest, which contained several eggs of both species, very easily distinguished by the differences in their color, shape, and size.

The Blue-bill is not uncommon in the fall, and also in the spring, near Calais, Me., but it is not found there in the winter. It winters on the coast of Massachusetts in mild seasons, and is especially common on the southern coast of Cape Cod. It is also occasional during winter in Bermuda.

Professor Kumlien informs me that this species occurs on Lake Koskonong, Wis., both in its spring and in its fall migrations. It is not common, and is more frequently found in the lake than in the creek.

Mr. J. A. Allen found it quite common in the fall in the valley of Great Salt Lake.

According to Giraud it is known to the hunters of Long Island as the "Broadbill," and also as the "Blue-bill." It arrives on the southern coast of that island between the 10th and the 20th of October, associating in large flocks. On its first appearance it is easily decoyed, but after having been frequently shot at it becomes more shy. In the stormy weather it takes shelter in the coves, and is frequently decoyed to within gunshot from the shore by having a dog trained to swim between it and the land, and also by the rapid waving of a red handkerchief, the party keeping concealed. It is supposed, from the impetuous manner in which the bird approaches, that it is angered by this manœuvre; and the effect is said to be very amusing. The Blue-bill remains on the coast of Long Island all the winter, unless compelled by the severity of the weather to seek a better supply of food elsewhere. Even when the bays are frozen it may be killed at the "air openings." When wounded it avoids pursuit by diving, and is celebrated for skulking under banks. But little advantage can be derived from the fact that the flock is a large one, if the hunter shows himself. The birds all scatter, and it is rarely possible to get even two in a range. Greater havoc is made if the flock swims up to the hunter when in position.

Birds of this species usually pass the nights on the flats in large flocks, seldom roosting on the marshes or meadows; and they readily discover the best feeding-grounds.

When in good condition this Duck is very highly esteemed for the table. In flying it rarely utters any note, but when swimming leisurely about in calm weather it is said to give utterance to a quick rattling or rolling sound. In its migrations its flight is high and rapid. It is common in the winter on the Ohio and Mississippi rivers and their tributaries.

In Chesapeake Bay, where it is very abundant, it is more generally known as the "Black-head," and in Virginia it is called the "Raft Duck." A writer in "Doughty's Cabinet" (I. 41) says the Black-heads arrive on the Chesapeake about the last of October, and rapidly distribute themselves over the Bay. This is one of the very few Ducks that are able to dive and pull up by the roots the *Vallisneria* plants on which it feeds. Other Ducks share in the spoils, especially the Baldpate, which, though of inferior size, is able, by its address and boldness, to rob both this species and the Canvas-back of the fruits of their labors. On the Chesapeake, where the Blue-bill feeds exclusively on the *Vallisneria* or other aquatic plants, it becomes very fat. Its flesh is tender and juicy, and entirely free from the strong fishy taste acquired in other localities. This bird feeds chiefly by night.

According to Yarrell, the Scaup Duck is a very late winter visitor to Great Britain, seldom appearing until the beginning of November, and arriving, in small flocks, on various parts of the coast, and at the mouths of rivers, but rarely visiting inland waters. It prefers low flat muddy shores, where it is pursued by the wild-fowl shooters in gun-punts, and is occasionally caught by fishermen in upright nets, fixed in curving lines on stakes in shallow bays. It feeds on small fish, mollusca, aquatic insects, and marine plants, and is not in request for the table, as its flesh becomes coarse, dark in color, and fishy in flavor. Being very expert in diving, it obtains the greater part of its food in this way. It rises slowly from the surface of the water, and usually against the wind, and flies at a moderate speed.

Colonel Montague kept Ducks of this species in confinement many years. They held apart from the other Ducks, and both sexes made the same grunting noise, and had the same singular toss of the head, in performing which they at the same time open the bill.

In spring this Duck departs to countries north of the Orkneys to breed, and there is only a single instance recorded of its breeding in Scotland. This was in Sutherlandshire, in June, 1834, and was observed by Sir W. Jardine.

Mr. Proctor, who found this bird breeding in Iceland, states that it lays its eggs either among the aquatic herbage or the large stones near the edge of fresh water, making little or no nest. A quantity of down usually covers the eggs, which are from five to eight in number. An egg brought from Iceland by Mr. Proctor is described by Yarrell as being of a uniform clay-brown color, 2.37 inches in length by 1.63 in breadth.

This species was found breeding on the Yukon River by Mr. J. Lockhart; on Big Island in Slave Lake by Mr. J. Reid; at Fort Rae by Mr. L. Clarke; at Lake Winnipeg by Mr. Donald Gunn; at Pastolik, Kutleet, Nulato, and on the Island of St. Michael's by Mr. Dall; and at Sitka by Mr. F. Bischoff.

Eggs in the Smithsonian Collection from the Yukon (No. 6617) are of a pale olive-gray, varying in length from 2.55 to 2.60 inches, and have an average breadth of 1.70 inches.

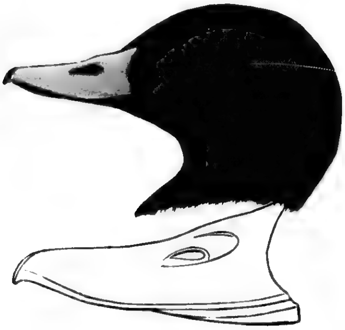
Fulix affinis.

THE LESSER SCAUP DUCK; LITTLE BLACK-HEAD, OR BLUE-BILL.

Fuligula marila, AUD. Orn. Biog. III. 1835, 226; V. 1839, 614, pl. 229; Synop. 1839, 286; B. Am. VI. 1843, 316, pl. 397.
Fuligula affinis, EYTON, Mon. Anat. 1838, 157. — COUES, Key, 1872, 289; Check List, 1873, no. 501; 2d ed. 1882, no. 721; B. N. W. 1874, 573.
Fulix affinis, BAIRD, B. N. Am. 1858, 791; Cat. N. Am. B. 1859, no. 589. — RIDGW. Nom. N. Am. B. 1881, no. 615.
Fuligula mariloides, VIG. Zool. Blossom, 1839, 31.
Fuligula minor, BELL, Pr. Ac. Nat. Sci. Philad. I. 1842, 141. — GIRAUD, B. Long. I. 1844, 323.

HAB. The whole of North America, south to Guatemala and the West Indies; breeds chiefly north of the United States.

SP. CHAR. Entirely similar to *F. marila*, but smaller. Total length, about 16.00 inches; extent, 25.00–30.00; wing, 7.60–8.25; culmen, 1.58–1.90; width of bill near end, .80–.95, at base, .60–.80; tarsus, 1.15–1.50; middle toe, 2.00–2.25.



Male (reduced).

Beyond the decidedly smaller size, we can perceive no difference between this bird and *F. marila* which seems to be constant. In most of the specimens before us, however, the green gloss of the head is much less distinct, in fact wanting entirely, or in many replaced by faint purplish; while the lower part of the neck is usually dull brownish and quite lustreless, in many examples forming quite as distinct a collar as in some specimens of *F. collaris*, though the color is never so rufescent as in the latter species. The zigzag markings on the back and scapular appear to be, as a rule, somewhat coarser than in *F. marila*. As in the larger species, the sides and flanks may be either marked with dusky, or quite immaculate.

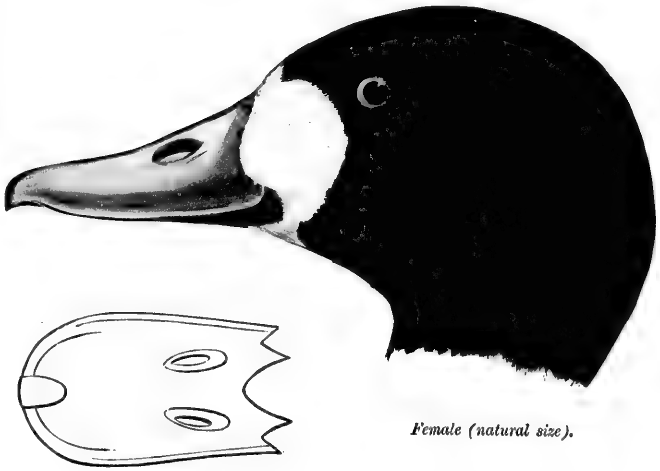
A larger series of specimens may prove the intergradation of this form with *F. marila*.

A full and complete history of this species cannot be given, in consequence of the confusion that has existed between it and the better-known *Fulix marila*, which, in appearance, and probably in habits, it so closely resembles. So far as my own observations go, I am inclined to agree with Dr. Cooper in regarding this species as a much more decided frequenter of the land than is the larger Black-head; and it is quite probable that much that has been written by Audubon and others in regard to the Scaup Duck, as seen on our rivers and lakes, may have had reference only to this species. In April, 1872, the markets of Detroit were abundantly and almost exclusively supplied with this Duck, brought from the marshes of Lake St. Clair; and both in the spring and in the fall it is abundant on Lake Koskonong, in Southern Wisconsin. It is found over the whole North American continent, both on the eastern and western coasts, is common in the interior waters, reaching the farthest north during its breeding-season, and in the winter wanders to the shores of the Gulf of Mexico, to Central America, and to Mexico. Mr. Dall found it not uncommon at the mouth of the Yukon River, and on the upper waters of that river. Mr. Kennicott mentions it as by far the most abundant Duck, and much more numerous there than on Slave Lake, not arriving early, but being the last to depart. Large flocks were also seen on the Porcupine River. They collect in large bands as soon as the young can fly; and these flocks are more numerous in the fall than in the spring.

Mr. Salvin found this Duck exceedingly abundant on the Lake of Dueñas during the winter months; and it was seen on Lake Atitlan as late as the month of May. Colonel Grayson found it in Western Mexico, in the neighborhood of Mazatlan, during the winter; and Dr. Heermann informed Mr. Dresser that it was common on the coast of Texas during the whole of that season.

Mr. Murray obtained it at Hudson's Bay, and Captain Blakiston also received examples from the same region. Mr. Ross found it abundant along the Mackenzie River, as far north as the Arctic Ocean. According to Mr. Hurdis it is occasionally obtained in the Bermudas.

Dr. Cooper found it less common on the Pacific coast than the *marila*, and he suggests, as the probable explanation, that it is more partial to the interior than it is to the sea-coast. In Eastern Oregon Captain Bendire found these Ducks common during the migrations, and thinks a few breed in the higher valleys of the Blue Mountains, where they remained into June.


Female (natural size).

Mr. George A. Boardman informs me that this species occurs both in the spring and in the fall in the neighborhood of Calais, and that it is by no means uncommon there. It is also found on the coast of Massachusetts at the same times, but to what extent is not certainly known. Its distinctness from the larger Black-head is not generally recognized by hunters, nor always by taxidermists. Mr. Maynard regards it as rare, and only found in its migrations.

Mr. Giraud was one of the first to recognize it as a species distinct from the *marila*, calling it the "Lesser Scaup Duck." He states that it had long been known to the Bay hunters, and by them was called the "Creek Broad-bill," from its habit of frequenting the small streams; while the *Fulix marila* is usually observed in the open bays. The Scaup Duck is said be a very abundant species; and during the autumn and the early part of spring it is quite common along the Middle Atlantic districts, as well as on the streams in the interior. In its choice of food, in its migrations, and in its breeding-range, its habits are presumed to be similar to those of the larger species. It is said to be of accidental occurrence in Europe.

Mr. Kennicott and Mr. MacFarlane both found it breeding in large numbers on the Yukon River, and have furnished interesting notes as to the general character, position, and locality of the nests. One of these, described by Mr. Kennicott, was found, June 19, at Fort Yukon; it was placed among grassy tussocks, surrounded by water, at the edge of a lake. The nest of this species is never built literally in the water, as is the case with the Canvas-back. This particular nest, as is usual with this species, was made of dry grasses, the bottom two inches above the water, and it contained nine eggs. Another nest was at the edge of a marsh, among long grass, and contained but a single egg. This nest was very incomplete; and Mr. Kennicott remarks that in all the nests of this species which he has found, in which the number of eggs is not nearly completed, the nest is only partially made, and is, in fact, only a pile of grass with the sides not built up, and without any feathers or down. A third nest with only two eggs, and incomplete, was found, June 18, upon and between two tussocks of grass, on the edge of a large lake, and in from one to two feet of water.

A nest found by Mr. MacFarlane, June 23, was in the midst of a swamp, and was a mere hole or depression in the centre of a tuft of grass; it was lined on its sides with a dark-colored down, and contained three eggs. Another, found in June, 1864, was in a swampy tract on the borders of the wooded country, was made of a quantity of down placed in the midst of a tuft of grassy turf, commonly called a *tête de femme*. The female was snared on the nest; and the eggs, six in number, contained partially developed embryos. A third nest, taken July 14, contained eight eggs with embryos well developed; it was situated in a clump of willows in the midst of a swamp, and close to a small lake, and was made of hay and down. Mr. MacFarlane also found this Duck breeding in the neighborhood of Fort Anderson and on the Lower Anderson River. His notes, describing twelve nests taken in this region, indicate a general uniformity in their situation and characteristics. The general number of eggs in a nest was nine, and this appears to be the usual complement. In several instances the male bird was found in company with his mate, and in one instance was shot in close proximity to the nest, even when the eggs contained embryos.

A careful examination of Audubon's account of the habits of the Scaup Duck clearly indicates that nearly all he says of it belongs in reality to this species; and this supposition is strengthened by the fact that he figures and describes the *affinis* rather than the larger Black-head. He speaks of observing the Scaup Duck by the thousand on the Ohio, the Missouri, and the Mississippi, from Pittsburg to New Orleans, where it occurred in such large bands that it was generally known as the "Flocking Fowl." These Ducks were seldom seen close together, and rarely associated with birds of other species. They seemed fond of large eddies below projecting points of land, frequently diving to a considerable distance in search of food. In such situations they might easily be approached and shot; and when danger was near they seemed to prefer to escape by swimming and diving rather than by flight, and they rose with some difficulty from the water. Audubon noted that these Ducks differed greatly in size, but does not seem to have been led from this to suspect that they really belonged to two distinct species.

Professor Kumlien informs me that this Duck is quite common in Southern Wisconsin both in the spring and in the fall. Some of these birds are to be found on Lake

Koskonong all the summer, and perhaps breed there; they have not, however, been found doing this, nor have any broods of young birds been noticed.

Eggs of this Duck from the Yukon River (Smithsonian Institution, Nos. 5637 and 6626) are of a pale grayish buff with a tinge of olive; their usual breadth is 1.50 inches, and their length varies from 2.20 to 2.50 inches.

Fulix collaris.

THE RING-NECKED SCAUP DUCK; RING-BILL.

Anas collaris, Donovan, Br. Birds, VI. 1809, pl. 147 (England).

Fuligula collaris, Bonap. List B. Eur. 1842, 73. — Coues, Key, 1872, 289; Check List, 1873, no. 502; 2d ed. 1882, no. 722; B. N. W. 1874, 574.

Fulix collaris, Baird, B. N. Am. 1858, 792; Cat. N. Am. B. 1859, no. 590. — Ridgw. Nom. N. Am. B. 1881, no. 616.

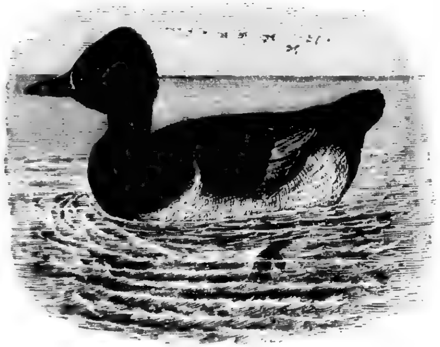
Anas fuligula, Wils. Am. Orn. VIII. 1814, 66, pl. 67, fig. 5 (not of Linn. 1766).

Anas (Fuligula) rufitorques, Bonap. Jour. Philad. Acad. III. 1824, 381.

Fuligula rufitorques, Bonap. Synop. 1828, 393. — Sw. & Rich. F. B. A. II. 1831, 454. — Nutt. Man. II. 1834, 439. — Aud. Orn. Biog. III. 1835, 259, pl. 234; Synop. 1839, 287; B. Am. VI. 1843, 320, pl. 398.

Hab. The whole of North America, south to Guatemala and the West Indies; breeding chiefly in the high north. Accidental in Europe.

Sp. Char. *Adult male:* Head, neck, jugulum, crissum, and upper parts generally, black, the head and neck with a faint violet gloss, the wing-coverts inclining to slate; secondaries ("speculum") bluish gray, darker subterminally, and very narrowly tipped with white; primaries slate-gray, the outer quills and ends of the others dusky. A triangular spot of white on the chin, and a more or less distinct collar of chestnut round the lower neck; breast and abdomen white, abruptly defined anteriorly against the black of the jugulum, but changing insensibly into the black on the crissum, through a graduated barring or transverse mottling of white and dusky; sides white, delicately undulated with grayish dusky. Axillars and lining of the wing immaculate white. Bill lead-color, with a narrow basal and broad subterminal band of bluish white, the end black; iris bright yellow; legs and feet pale slaty. *Adult female:* Crown and nape dull dark brown, becoming gradually lighter below; rest of the head paler and grayer, the anterior half of the lores, the chin, throat, and foreneck nearly or quite white; jugulum, sides, and flanks, deep

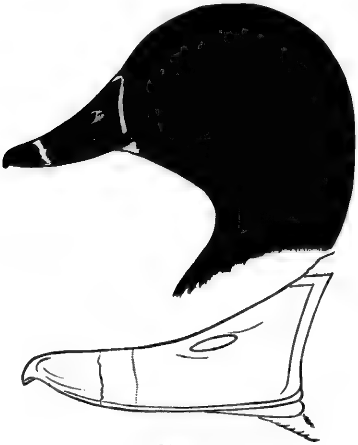


F. collaris, male.

fulvous or raw-umber brown ; breast and abdomen white ; anal region dull brown, longer feathers of the crissum whitish ; wings as in the male ; remaining upper parts dull dark brown, the feathers of the back narrowly tipped with fulvous. Bands on the bill narrower and less distinct than in the male ; iris yellow ; feet slaty.

Total length, about 16 to 18 inches, extent, 24 to 27 ; culmen, 1.75–2.00 ; tarsus, 1.30–1.45 ; middle toe, 2.00–2.15.

Downy young :[1] Above, grayish umber-brown, relieved by seven spots of light buff, as follows : a small and inconspicuous spot in the middle of the back, between, and a little anterior to, the wings ; a large patch on each side the back, another on each side the rump, at the base of the tail, and a bar across the posterior border of each wing. Crown, occiput, and nape crossed longitudinally by a wide stripe of deep grayish umber ; a roundish isolated spot of light grayish brown directly over the ears ; remainder of the head, including the forehead, and lower parts generally, light dingy buff, the flanks crossed by a brown transverse stripe from the rump to the tibia. *Side of the head without any longitudinal stripes.*

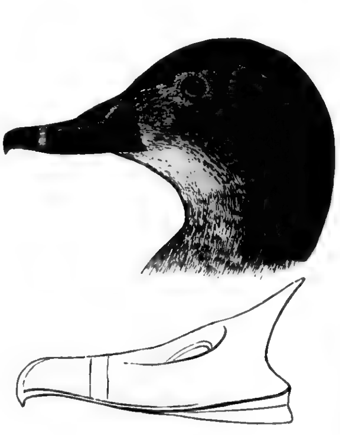


Male.

The chief variation in the plumage of this species consists in the distinctness of the chestnut collar in the male. In some examples this is scarcely more conspicuous than in *F. affinis*, being dull brown instead of reddish ; but usually the color is a well-defined chestnut, particularly in front.

The female Ring-neck resembles very closely indeed that of the Red-head (*Æthyia americana*), but may be distinguished by the character to which attention is called under the latter species (see p. 36).

The Ring-necked Duck, as compared with other species, does not appear to be anywhere an abundant bird, although found nearly throughout America. It breeds as far south as Calais, near the eastern coast, in Southern Wisconsin, and in Minnesota. It is said to breed as far to the north as Fort Simpson, where it was found by Mr. B. Ross. In the winter it extends its migrations to the Gulf of Mexico, to the Pacific coast of Mexico, and to Central America. It is also found in the winter in Cuba, and probably in most, if not all, the other West India islands. Dr. Bryant speaks of finding it in immense flocks in winter in the Bahamas.



Female.

This Duck was taken by Mr. Salvin at Coban, Vera Paz, November, 1859, when it was found frequenting the river in considerable numbers. Colonel Grayson also obtained it at Mazatlan in Western Mexico, and Mr. John Xantus on the Rio de Coahuano in the same region. Mr. Dresser, in his journey from San Antonio to Eagle Pass, in Western Texas, in December, shot one of this species on the Nueces River, and saw several others at the same time and place.

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[1] Described from No. 60550, Calais, Me. ; G. A. BOARDMAN. This example is pretty well grown, being nearly 8 inches in total length, the bill nearly 1 inch ; younger individuals would doubtless be more highly colored — probably deep buff beneath and on the head.

This Duck occurs on the Pacific coast at least as far north as Vancouver Island, where it was taken by Mr. R. Browne. Dr. Cooper mentions that a single specimen of this species was obtained near the Straits of Fuca by Dr. Kennerly, when with the Northwestern Boundary Expedition in 1857. It was shot September 14; and from its occurrence so early in the season in that latitude the inference may be drawn that it occasionally comes into California in the winter, unless only an accidental visitor to the Pacific coast. Dr. Cooper does not regard it as common there, but states that it may be found to the south as far as Mexico, and that it is usually seen in localities similar to those in which the Blue-bill occurs.

Mr. George A. Boardman informs me that this Duck is seen every summer in the vicinity of Calais, and that it breeds there. The same gentleman states in the "Naturalist" (V. 121) that in the spring of 1870 he found several flocks of the Ring-necked Duck breeding on the river near Calais, and that in one instance he secured the old birds and the young ducklings. In the summer of 1874 Mr. Boardman was so fortunate as to meet with the nest and eggs of this species. The nest, containing eleven eggs, was placed among the reeds and thick grass on the banks of the St. Croix River, and was made of dry grasses, but without any down.

This Duck is of not infrequent occurrence in Eastern Massachusetts, where it is usually seen on the larger streams near their mouths; but it has been taken in several instances in the Merrimack just below Haverhill. Mr. William Brewster shot a specimen near Belmont, Mass., November, 1867; and several other instances of its capture in this region are recorded.

This Duck is mentioned by Giraud as of occasional occurrence on Long Island. By the hunters of that locality it is generally considered as a hybrid, and is familiarly known as the "Bastard Broad-bill." Along the sea-coast it is not abundant, but a few of this species are observed almost every spring and autumn on the south shore of Long Island, and at Egg Harbor, New Jersey. On the streams of the interior it is quite common during the winter. Mr. Giraud met with it on the Ohio in various localities, and also on the Mississippi as far south as New Orleans. It associates with others of the same species in small flocks, and is usually observed flying but a short distance above the water. The largest flock Mr. Giraud ever noticed consisted of from nine to twelve individuals. These he saw at the mouth of the Licking River. They were not so plentiful in the vicinity of Cincinnati as they were farther down the Ohio.

A single specimen was obtained at Bermuda by Mr. Hurdis in November. It was a young bird in the plumage of the first season which had been taken alive, and an attempt was made to keep it.

Richardson states that this species breeds in all parts of the Fur Country, from the 50th parallel to its most northern limits. Whether this is given on his own knowledge or on the authority of others does not appear. There has been no farther evidence confirmatory of his statement, which quite possibly is not correct.

Audubon speaks of this Duck as being abundant on all the western waters during the autumn and winter. It is also met with along our Atlantic coast, but by no means in such numbers as in the interior. He says that its flesh is excellent, being fat, tender, and juicy, and having none of the fishy flavor of those species which are in the habit of diving deep for their food. This Duck arrives in the region between

Kentucky and New Orleans from the 20th of September to the middle of October; and at this period it may also be found from Massachusetts to Louisiana. It is said to move in flocks of from fifteen to twenty, keeping rather scattered, flying with rapidity, and at a considerable height. It is also described as swimming with lightness and ease, and experiencing no difficulty in rising on wing, either from land or water. Like *F. marila*, it is said to have the almost constant practice of raising its head in a curved manner, erecting its occipital feathers, and emitting a note resembling the sound produced by a person blowing through a tube. Ducks of this species feed by diving and by dabbling with their bills among the roots of grasses — eating seeds, as well as snails and aquatic insects. A male which Mr. Audubon shot near Louisville, in the beginning of May, was found to contain a frog, the body of which was nearly two inches long, and by which the bird had been almost choked.

This Duck is found nearly throughout the year in Southern Wisconsin, where it breeds to some extent, and from which region it is only absent during the severity of the winter. It has also been found breeding in Minnesota by Mr. Goss, who obtained several nests with their eggs.

Professor Kumlien informs me that this species is quite common in Southern Wisconsin, but that it is not so abundant in the spring and fall as the *F. affinis*. Both of these two species are found all summer in Rice and Koskonong lakes in pairs, and he thinks that this species undoubtedly breeds in both places, though its eggs have not been identified with certainty. Several years ago a nest supposed to be of this bird was found in Rice Lake, which is also known as Bunting's Lake.

Mr. B. F. Goss, of Pewaukee, Wis., writes me that several years ago he found a nest of the Ring-necked Duck, containing ten eggs, on a bog in thick cover close to the water. He has since met with several pairs of these Ducks, which were evidently breeding; but he could not find their nests. The one referred to was found on the 20th of May, 1867, near Pewaukee Lake, about three feet from the edge, in thick cover. It was made of old grasses very neatly put together and slightly lined with feathers. Every year since, several pairs have remained all summer in the lake, but he has not been able to discover their nests.

Dr. Kennerly, in his Notes on the Birds of the Mexican Boundary Survey, mentions procuring his first specimen of this bird at Boca Grande, Chihuahua. It was quite tame, and was easily approached. Another was taken on Janos River in April, where this Duck was seen in very large flocks.

The eggs of this species are of a grayish ivory-white, a buffy tinge occasionally replacing the gray. They measure 2.10 inches in length by 1.65 in breadth.

GENUS **ÆTHYIA**, BOIE.

Aythya, BOIE, Isis, 1822, 564 (type, *Anas ferina*, LINN.).
Aristonetta, BAIRD, B. N. Am. Aug. 19, 1858, 793 (type, *Anas vallisneria*, WILS.).

CHAR. Very similar to *Fulix*, but bill longer and narrower, the head and neck chestnut-red instead of black, in the males. Otherwise quite of the same form and style of coloration.

As stated in "Birds of North America" (p. 793), it is exceedingly questionable whether this so-called genus should be separated from *Fulix*. It is true that *Æ. vallisneria* is very different in the shape of the bill from the typical species of *Fulix*, but other species, belonging chiefly to the Old World, are more or less intermediate.

The two American species and their European analogue may be distinguished by the following characters: —

COM. CHAR. Secondaries bluish gray, the upper feathers narrowly edged with black. *Adult male:* Head and neck reddish brown; jugulum and anterior part of back, lower part of rump, upper tail-coverts, and crissum black; back, scapulars, flanks, anal region, and sometimes (in *Æ. ferina*) whole abdomen, white, finely vermiculated with dusky.

Æ. americana.

A. Bill as long as middle toe (without claw), its greatest width not more than one third the length of the culmen, much depressed at the end, the nail scarcely hooked (***Aristonetta***, BAIRD).

1. **Æ. vallisneria.** Head and neck reddish cinnamon or rusty brown in the male, the former dusky on top and anteriorly; jugulum, anterior portion of back, rump, upper tail-coverts, tail, and crissum black; remainder of the body white, the upper surface, sides, flanks, and anal region finely vermiculated with dusky. Bill entirely black. Wing, 8.75–9.25 inches; culmen, 2.10–2.50; greatest width of bill, .75–.80; tarsus, 1.70; middle toe, 2.60–2.65. *Hab.* North America.

B. Bill much shorter than middle toe (without claw), its greatest width nearly half the length of the culmen, the end moderately depressed, and the nail decidedly hooked (***Æthyia***).

2. **Æ. americana.** Head and neck rich reddish chestnut, the latter glossed with reddish purple; back, scapulars, sides, and flanks vermiculated with white and dusky in nearly equal quantity; abdomen immaculate white. Bill pale blue, the end black. Wing, 8.50–9.25 inches; culmen, 2.05–2.25; greatest width of bill, .75–.85; tarsus, 1.60–1.65; middle toe, 2.30–2.40. *Hab.* North America.
3. **Æ. ferina.**[1] Head and neck chestnut-rufous, the latter without decided purplish gloss; back, scapulars, sides, flanks, and abdomen white, everywhere finely vermiculated with dusky. Bill black, crossed, a little anterior to the middle, by a wide band of pale blue. Wing, 8.00–8.50 inches; culmen, 2.20–2.40; greatest width of bill, .70–.78; tarsus, 1.30–1.55; middle toe, 2.30–2.50. *Hab.* Europe.

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[1] ÆTHYIA FERINA.

Anas ferina, LINN. S. N. ed. 10, I. 1758, 126; ed. 12, I. 1766, 203. — NAUM. Vög. Deutschl. XII. 1844, 21, pl. 308.
Fuligula ferina, KEYS. & BLAS. Wirb. Eur. 87.
Nyroca ferina, FLEM. Phil. of Zool. II. 260. — GRAY, Gen. III. 621; Cat. Brit. B. 1863, 200.
Aythya ferina, BOIE, Isis, 1822, 564. — BONAP. Comp. List, 1838, 58. — MACGILL. Man. II. 191.
Anas rufa, GMEL. S. N., I. 1788, 515.
Anas erythrocephala, S. G. GMEL. Reise, I. 1770, 71.
Aythya erythrocephala, BREHM, Vög. Deutschl. 919.
Pochard, YARR. Brit. B. ed. 2, III. 332, fig.; ed. 3, III. 334, fig.

HAB. Palæarctic Region.

Æthyia vallisneria.

THE CANVAS-BACK DUCK.

Anas vallisneria, Wils. Am. Orn. VIII. 1814, 103, pl. 7, fig. 3.

Fuligula vallisneria, Stephens, Shaw's Gen. Zool. XII. ii. 1824, 196. — Sw. & Rich. F. B. A. II. 1831, 451. — Nutt. Man. II. 1834, 430. — Aud. Orn. Biog. IV. 1838, 1, pl. 301; Synop. 1839, 285; B. Am. VI. 1843, 299, pl. 395. — Coues, Key, 1872, 290; Check List, 1873, no. 504; ed. 2, 1882, no. 724; B. N. W. 1874, 575.

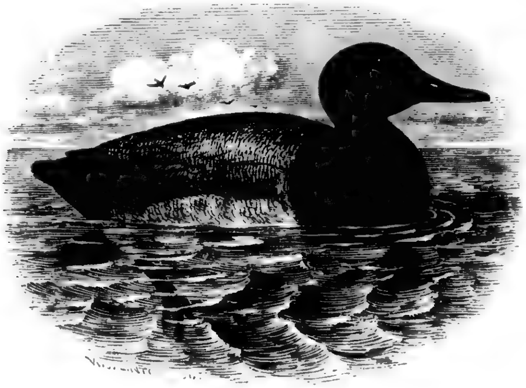
Aythya vallisneria, Boie, Isis, 1826, 980. — Baird, B. N. Am. 1858, 794; Cat. N. Am. B. 1859, no. 592.

Æthyia vallisneria, Scl. & Salv. Nom. Neotr. 1873. — Ridgw. Nom. N. Am. B. 1881, no. 617.

Aristonetta vallisneria, Baird, B. N. Am. 1858, 793 (in text).

Hab. Nearly the whole of North America, breeding from the Northwestern States northward to Alaska; south in winter to Guatemala.

Sp. Char. Bill long and narrow, the end much depressed, with the nail scarcely decurved, the base high, with the culmen gradually sloping and scarcely concave; culmen nearly as long as the middle toe (without claw), and about three times the greatest width of the maxilla. *Adult male:* Head and neck chestnut-rufous, the former brownish dusky (sometimes quite blackish) anteriorly and on top; jugulum and anterior part of back, lower part of rump, upper tail-coverts, and posterior part of crissum black; back, scapulars, flanks, sides, and anal region white, finely and delicately vermiculated with dusky; breast and abdomen immaculate white. Wing-coverts deep ash-gray, finely sprinkled with white; secondaries ("speculum") lighter, more bluish gray, the upper feathers edged with black; tertials like the longer scapulars; primaries slate-color, the inner quills more cinereous, except at ends, where dusky; tail dusky. Bill entirely greenish black; iris carmine-red; feet bluish gray. *Adult female:* Head, neck, jugulum, and anterior part of back raw-umber brown, a post-ocular space and the foreneck whitish, the chin, throat, and cheeks tinged with fulvous; wings as in the male, but coverts almost or quite uniform gray; back, scapulars, sides and flanks with only the exposed ends of the feathers vermiculated with white and dusky, the remainder being grayish brown. Bill greenish black; iris brownish red; feet plumbeous.



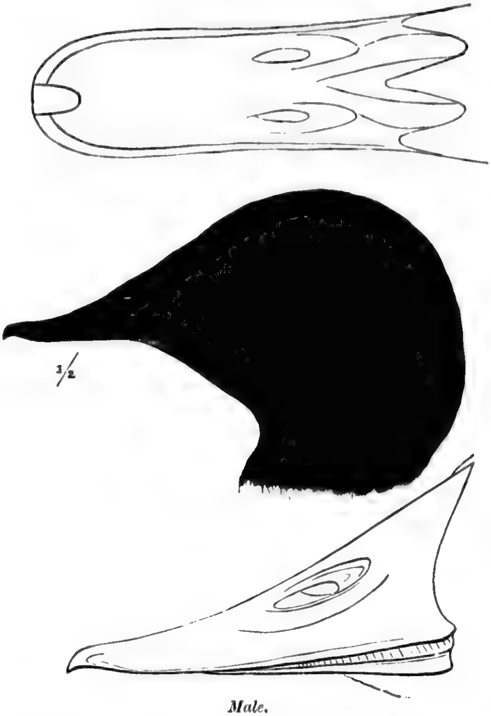
Æ. vallisneria.

Total length, about 20.00 to 22.00 inches; extent, 30.00 to 33.00; wing, 8.75–9.25; culmen, 2.10–2.50; greatest width of bill, .75–.80; tarsus, 1.70; middle toe, 2.60–2.65.

The far-famed Canvas-back Duck is an exclusively North American species. Closely resembling, in appearance, habits, and in very many of its general characteristics, the Pochard of Europe and the Red-head of America, it is still quite distinct from, and superior to, both these species in the reputation and the intrinsic excellence of its flesh. It is found throughout North America, from the Arctic Ocean to Central America, on the interior waters, and on both shores. It is not found on either shore of the more northern portions of the continent, unless as an exceptional occurrence. It breeds on the interior ponds, rivers, and lakes, from Oregon to the more extreme northern portions of the continent.

Only a single specimen was obtained by Mr. Salvin from the Lake of Dueñas, in Guatemala. Mr. Dresser met with it in Texas — killing two on the Nueces, and seeing others on Turkey Creek.

Mr. Dall speaks of it as occurring at Fort Yukon, where it was breeding in abundance; but none were seen on the Yukon River to the southwest of that point, nor is there any evidence that this species is known on the Pacific coast north of Vancouver Island, where its presence was noticed by Mr. R. Browne.



Male.

According to Dr. Cooper this Duck is very common along the Pacific coast, wintering from Puget Sound to San Diego. It is also found on the interior rivers, being quite abundant along the Colorado at that season, arriving in October and remaining until April, when it departs for its northern breeding-places. Dr. Newberry found it more abundant than any other Duck in the lakes and streams of the Cascade Range, in whose deep solitudes he obtained satisfactory evidence that this bird nests, and rears its young, as he frequently met with broods of this Duck.

The *Vallisneria*, on which plant the Canvas-back feeds in the Chesapeake and other waters east of the mountains, is not found on the Pacific coast; and this species, being there obliged to live on grass, seeds, and the other usual food of the Duck family, is not considered superior to the Mallard, or even as good as that bird. The Canvas-backs assemble in great flocks in the bays, especially at night; they sleep on the open water, at which time many are shot by the hunters, who pursue them in boats, concealed by means of branches and other disguises, and row silently down into the midst of the flock. On the Pacific coast, however, they are not hunted so much as some other kinds held in higher esteem.

This species of Duck extends its winter migrations on the Pacific farther south than California, reaching Mazatlan, in Western Mexico, where Colonel Grayson found it not uncommon during the winter months.

Richardson states that in the interior this Duck breeds from the fiftieth parallel to the most northern limit of the Fur Country. Mr. Ross met with it on Great Slave Lake, but did not observe it any farther north. Captain Blakiston obtained a single specimen at Fort Carlton, in the valley of the Saskatchewan.

Mr. Boardman informs me that examples of this species are occasionally taken near Calais, but that its appearance there is very irregular. This bird is also extremely rare on the coast of Massachusetts; yet hardly a year passes that some specimens of it are not brought into the Boston market, chiefly from the county of Barnstable, in the southeastern portion of the State. In November, 1874, a small flock was found off that coast, and seven individuals were brought to the stall of Mr. David A. Dunham, in Quincy Market.

Those Canvas-backs which frequent the shores of Long Island, according to Giraud, return from their breeding-places at the north about the first of November; and in the winter some are occasionally shot in the eastern part of Great South Bay. They are also sometimes taken in Long Island Sound, both on the southern and on the Connecticut shore. Dr. Woods has obtained them on the Connecticut, a few miles above its mouth. Canvas-backs from the vicinity of New York are much inferior to those taken in the Chesapeake and its tributaries, owing to the difference in the quality of their food. This Duck feeds in preference on the root of the *Vallisneria spiralis*, called by some tape-grass, and by others, incorrectly, wild celery. This plant grows both in fresh and in brackish water. Where this favorite food cannot be obtained, this Duck feeds on various marine plants and small shellfish, which abound on the coast, and furnish an abundant supply of food to other Ducks of less note. Where this tape-grass cannot be procured, the flesh loses in a great degree that delicacy of flavor for which the Canvas-back is so celebrated. This bird is in the best condition for the table in the latter part of the autumn.

These Ducks associate in large flocks; and when they all rise together from the water the noise made may be heard to a great distance. They are very vigilant, and difficult of approach, except in severe weather, when they may be easily killed at air-openings in the ice. This bird is an excellent diver, and when only wounded can with difficulty be secured. Miller's Island, about fifteen miles from Baltimore, was formerly a famous place for shooting Canvas-backs, as well as other Ducks; and points on this island, and on others in the vicinity, were rented for large sums.

A writer in "Doughty's Cabinet" (I. 41) states that unless the weather at the north has been very severe, the Canvas-back rarely appears in large numbers in Chesapeake Bay before the middle of November. When first arrived these birds are thin and tasteless, and need several days of undisturbed repose to give them that peculiar flavor for which they are so celebrated. During the low tides succeeding their arrival they sit on the flats far from the shore, and rarely rise to the wing unless disturbed. When the spring-tides render the water too deep for feeding, they pass down the bay in the morning, and return in the evening.

By the middle of December, particularly if the weather has been severe, the fowl of every kind have become so fat that Canvas-backs have been known to burst open in the breast in falling on the water. They now spend less time in feeding, pass up and down the Bay, from river to river, in their morning and evening flights, and offer at certain localities great opportunities for their destruction. They pursue, even in their short passages, very much the order of their migratory movements, flying in two lines diverging from a centre; and when the wind blows on the points which lie in their course, the sportsman has great chances of success. The birds avoid, if possible, an approach to the shore; but when a strong breeze sets them in that direction, they are compelled to pass near the projecting points of land within gunshot. In the Susquehanna and Elk rivers there are few of these points, and success depends on shooting the Ducks on their feeding-grounds. After passing the eastern point at the mouth of the Susquehanna, and Turkey Point on the western side of the Elk, the first place of much celebrity is the "Narrows," between Spesutic Island and the western shore, about three miles in length, and from three to five hundred yards in breadth; and here the Canvas-backs feed. A few miles down the western shore is Taylor's Island, at the mouth of the Rumney, and also Abby Island, at the mouth of the Bush — both celebrated localities for Ducks, Geese, and Swans. The south point of Bush River, and Robbins's and Rickett's Points, near Gunpowder, are also famous. When disturbed on their feeding-grounds, the birds forsake those haunts and seek others; therefore in the rivers leading to the Bay, near shooting-points, they should not be annoyed by being shot at from boats, either by night or day, as a repetition of such visits would soon drive the Ducks from their favorite haunts.

The best grounds are found on the western side; and there southerly winds are the most favorable ones. If a high tide is attended with a smart frost and mild south winds, the number of birds set in motion is inconceivable; and they approach the points so closely, that even a moderately good shot can procure from fifty to a hundred Ducks in a day. This was once quite a common occurrence; and the writer quoted has known eight Canvas-backs to be killed at one discharge. The usual mode of taking these Ducks was either by shooting them from the point during flight, or by "toling" — an operation by which the birds are sometimes induced to approach within a few feet of the shore from a distance of several hundred yards. A favorable spot is selected, where the Ducks are feeding a few hundred yards from the shore, and where they can easily approach it closely by swimming. The higher the tides and the calmer the day, the better the chance of success. A kind of poodle-dog, of the breed familiarly known as the "toler," is trained to run along the shore in sight of the Ducks. The dog soon becomes quite expert at the business, and learns, as the Ducks approach, gradually to conceal himself. The nearest Ducks notice this strange appearance, raise their heads, gaze intently, and approach the shore. The rest follow; and in some cases several thousand Ducks of various kinds have been seen to swim in solid mass direct to the object of their curiosity. By removing the dog farther into the grass they have been attracted to within fifteen feet of the bank. Black-heads can be toled the most readily, then Red-heads, and next the Canvas-back.

Another method of killing Canvas-backs, described by Lewis, is to boat them on their feeding-grounds in small skiffs, either during the daytime or at night — the latter being the most destructive method. A large swivel, carrying several ounces of powder and a pound or more of shot, is placed on the bows of a light boat, and by means of muffled oars, and under cover of the darkness, this is carried into the very midst of the sleeping Ducks; and on firing into their thick columns, great numbers are crippled or killed. This mode of slaughter is considered very disreputable, and has been forbidden by legislative enactments. Boating Ducks on their feeding-grounds, even with small guns and by daylight, will soon drive them from their accustomed haunts, and should be condemned by the true sportsman.

Another ingenious, but very objectionable, way of taking this Duck, known as "netting," was once resorted to. This consisted in sinking gill-nets a short distance below the surface of the water, so that the Ducks, in diving, would get entangled in the meshes; and great numbers were secured in this way. But this has the effect of completely driving the Ducks away; and it was found that when taken in this manner they were hardly fit to eat.

Another successful mode of killing Ducks, and one that once was much in vogue, is the use of what are known as "dugouts." These are small boats moored over the flats, concealed from observation as far as possible by quantities of eel-grass thrown over and about them, and surrounded by large numbers of decoys anchored near the vessel. The occupant of the dugout patiently awaits the arrival of the Wild Ducks, which are attracted by the decoys. When the weather is favorable and the Ducks are flying, this plan is very successful; but it is not successful in cold or boisterous weather. More recently the old-fashioned dugout has been superseded by the "surface-boat," or "battery," as it is called. This contrivance is anchored on the feeding-ground, and surrounded by decoys. Its construction is such that when anchored out the water is on a level with the deck of the box, the occupant, when reclining, being entirely concealed from observation, so that nothing can be seen even at a distance of only a few hundred feet. Several double-barrelled guns are usually in readiness; and this battery is accompanied by a companion in a sail or row boat, who keeps at a distance, ready to pick up the dead Ducks, or to render such aid as may be required. The number of Ducks killed in this manner is said to be incredible.

A very ingenious contrivance for Duck-shooting was seen by Mr. Lewis on Elk River. This ambush was prepared by taking advantage of low tides, and driving four strong posts in a square into the soft mud, in the centre of a wide expanse of feeding-ground, in the path of the Ducks as they fly up and down the river. The upper portions of these posts are perforated with large holes, permitting the introduction of long hickory pins, which pass through and project several inches; from these pins is suspended a light frame, strong enough to bear the weight of the hunter, who is concealed from observation by a pile of cedar-brush or eel-grass — the framework being raised or lowered according to the condition of the tide. This particular kind of blind is well adapted for this river, where the feeding-grounds are quite extensive; and immense flocks of wild-fowl are occasionally thus attracted.

Another, and often very successful, device for shooting the Canvas-back is by taking advantage of the severity of the weather, which drives the bird from its favorite feeding-grounds, and then enticing them within reach of an ambush on shore, by cutting a large hole in the ice directly over some choice feeding-shoal. Large numbers may be killed in this manner.

This species, in and around Chesapeake Bay, has long been regarded as pre-eminent for the richness and delicacy of the flavor of its flesh; and it is claimed by many that no wild-fowl in any part of the world can vie in this respect with the Canvas-back of these waters. It has been hunted on the Chesapeake and its tributaries with unrelenting greed, until its numbers have been greatly reduced, and many have been driven to more southern regions. This bird always commands a ready sale; and even when sent to the market by thousands, always brings a high price. While a few Canvas-backs are met with in the waters of the Hudson, the Delaware, and in other eastern rivers, by far the larger portion of them resort to Chesapeake Bay and the adjacent waters. Of late years its numbers have greatly increased along the short rivers of North Carolina. It is also found in abundance on the western lakes, and is particularly numerous on Lake Koskonong, in Southern Wisconsin. In March I have seen the markets of Chicago well supplied with this Duck; and although there in no wise superior to the Mallard, the Pin-tail, the Teals, and other Ducks, yet commanding twice the market-price of any other species.

The Canvas-back extends its migrations to Florida, Louisiana, and Texas. In New Orleans it is called the *Canard Cheval*, and is much esteemed in that city for its delicacy, though far inferior to birds of this species killed on the Chesapeake. It is occasionally found in the markets of Charleston and Savannah; but it is not there esteemed so highly as are many other kinds. This Duck is also very abundant at times near Galveston, Texas, where it feeds on the seeds of the wild oats, the water-lily, and other plants, and is said to become delicious eating.

Messrs. Lockhart and Kennicott have supplied interesting notes in relation to the nesting of this Duck, which was found breeding on the Yukon in great numbers. The eggs were from seven to ten in number, and incubation began about the middle of June.

In Eastern Oregon, in the neighborhood of Lake Malheur and Camp Harney, Captain Bendire found this an abundant species during its migrations, and breeding in the higher mountain valleys of the Blue Mountains, where he found it nesting on Bear Creek, at an altitude of six thousand feet. In the spring and fall it frequents the shallow portions of the lakes in immense flocks; but its flesh is not so well flavored as at the east.

The Canvas-back was found breeding at Fort Resolution, as well as on the Yukon River, by Mr. Kennicott; on the Yukon also by Mr. J. Lockhart; at Fort Simpson by Mr. B. Ross; at Fort Rae by Mr. L. Clarke; at Fort Yukon by Mr. S. Jones; on Anderson River by Mr. MacFarlane; at Nulato by Mr. Dall; at Sitka by Mr. Bischoff; and near the mouth of Frazer River by Mr. H. W. Elliott.

Mr. Lockhart describes the nest of No. 27808 as being formed of rushes and grass, in water, and built from the bottom, large and deep; but less thickly lined with down and feathers than the nests of Ducks usually are. It contained seven eggs. All the nests found, with a single exception, resembled this one, and were similarly situated. They are constructed gradually, as the Duck continues to lay, and are entirely finished when incubation begins. The exception referred to was on the ground in an open place, which had been left dry as the river fell; the nest in this case was at the foot of a few small willows, and about twenty yards from the water. It was built of down and feathers, and had small sticks on the sides, but little or nothing on the bottom. The feathers in the nest were gray, tipped with chestnut, similar to those on the breast of the Canvas-back. This nest contained eight eggs.

Mr. Kennicott describes nest No. 6669 as built from the ground, in water a foot deep, in the grassy edge of a lake. The base was large, and formed of a pile of grass, the nest proper being placed on top. The cavity was large, the sides well built up, and thoroughly lined with down. For the construction of this large base the bird had pulled up or broken off all the dry grass within a yard or two of the nest, thus leaving it in a clear place. The shell of the egg is remarkably hard and brittle. From the same nest was taken a second lot of eggs, the female having again made use of it. When first found, in June, it was not complete; as among all the Ducks the nest is not finished until incubation begins.

Eggs of this species from Fort Yukon (Smithsonian Institution, Nos. 6669 and 6660) are of a uniform pale grayish-green color. Four eggs have the following measurements: 2.50 by 1.80 inches; 2.55 by 1.75; 2.60 by 1.80; 2.40 by 1.75.

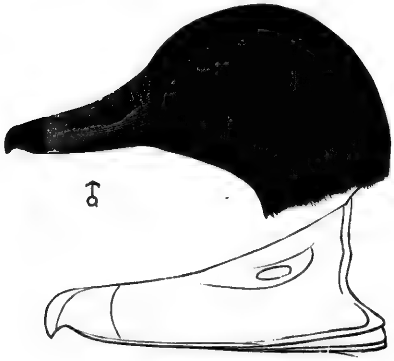
Æthyia americana.

THE RED-HEADED DUCK.

Anas ferina, Wils. Am. Orn. VIII. 1814, 110, pl. 70, fig. 6 (not of Linn.).
Fuligula ferina, Bonap. Synop. 1828, 392. — Sw. & Rich. F. B. A. II. 1831, 452. — Nutt. Man. II. 1834, 434. — Aud. Orn. Biog. IV. 1838, 198, pl. 322; Synop. 1839, 287; B. Am. VI. 1843, 311, pl. 396.
Fuligula americana, Eyton, Mon. Anat. 1838, 155.
Aythya ferina, δ, *americana*, Bonap. Compt. Rend. XLIII. Sept. 1856, 651.
Aythya americana, Baird, B. N. Am. 1858, 793; Cat. N. Am. B. 1859, no. 591.
Æthyia americana, Scl. & Salv. Nom. Neotr. 1873. — Ridgw. Nom. N. Am. B. 1881, no. 618.
Aythya ferina, var. *americana*, Allen, Bull. M. C. Z. III. 1872, 183.
Fuligula ferina, var. *americana*, Coues, Key, 1872, 289; Check List, 1873, no. 503; B. N. W. 1874, 575.
Fuligula ferina americana, Coues, Check List, 2d ed. 1882, no. 723.
Aythya erythrocephala, Bonap. Comp. List, 1838, 58.

Hab. The whole of North America, breeding from Central California and Maine, to the Fur Countries; Bahamas.

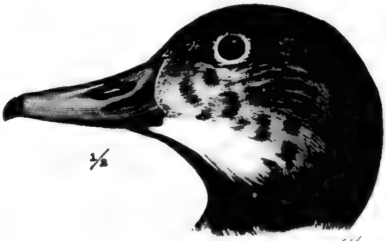
Sp. Char. Bill much shorter than the middle toe (without claw), broad, the end moderately depressed, and with the nail decidedly decurved, the culmen about two and a half times the greatest width of the maxilla, and decidedly concave. *Adult male:* Head and upper half, or more, of the neck rich reddish chestnut, the latter glossed with reddish purple; lower part of the neck, jugulum, anterior part of the back, lower part of the rump, upper tail-coverts, and crissum, black; back, scapulars, sides, and flanks, densely vermiculated with white and dusky in about equal proportion; anal region similarly, but more faintly, marked; entire abdomen immaculate white; wing-coverts deep plumbeous-gray, faintly and minutely sprinkled with white; secondaries ("speculum") pale bluish gray, the upper feathers edged with black, the others narrowly tipped with white; primaries dusky, the inner quills slate-gray, except at ends; tail dusky. Bill pale blue, the end black; iris red; feet bluish gray. *Adult female:* Head and neck grayish brown, darkest above; the anterior part of the head lighter, almost white on the chin and upper part of the throat; jugulum, sides, and flanks dull grayish brown, the feathers tipped with fulvous; wings as in the male, but the coverts plain slate-color; back and scapulars grayish brown, the feathers with paler tips; rump, upper tail-coverts, and tail dusky grayish brown; anal region paler; longer lower tail-coverts whitish. Bill plumbeous, the end black; iris yellow; feet plumbeous. *Downy young* (No. 82481, St. Clair Flats, Mich., June 29, 1880; W. H. Collins): Above, ochreous olive-brown, indistinctly relieved by an olive-yellow spot back of each wing, one on the hind border of each arm-wing, and one on each side of the rump; entire head and neck (except pileum and nape), with whole lower parts deep, buff yellow, paler and less yellow on abdomen and anal region. No dark markings whatever on side of head. Bill and feet light colored (brownish in dried skin).



Male.

Total length, about, 20.00–21.00 inches; extent, 33.00; wing, about 8.50; culmen, 2.05–2.25; greatest width of bill, .75–.85; tarsus, 1.60–1.65; middle toe, 2.30–2.40.

The American Red-head Duck is quite distinct from the Pochard of Europe, though resembling it very closely. The latter has the bill narrower and longer, in fact nearly intermediate in shape between that of *Æ. americana* and *Æ. vallisneria;* its color is also different, being black, crossed by a band of pale blue, instead of pale blue with the end black; the entire abdomen is undulated with gray, like the sides and flanks, only more delicately, while the back, scapulars, and sides are much whiter than in *Æ. americana.* The rich chestnut-red of the neck is destitute of the metallic reddish-purple gloss, while it involves the entire neck, even tinging the anterior part of the back, instead of being confined to about the upper half of the neck; the wing-coverts are also much lighter colored, and, in most specimens, very distinctly vermiculated with white, instead of nearly plain slaty gray. In general size the European species is decidedly inferior; the tarsus is considerably shorter, while the middle toe is decidedly longer.



Female.

The female of the Red-head resembles that of the Ring-neck, or Ring-billed Black-head (*Fulix collaris*), so closely as to be distinguished with difficulty, except on direct comparison. The latter has all the colors darker, however, the fore part of the head and the throat more decidedly white, and the bill much shorter and broader. The different proportions, however, afford the surest means of distinguishing them, the two species comparing about as follows: —

Æ. americana. Wing, 8.50 inches; culmen, 1.90; greatest width of bill, .85, least width, .75; tarsus, 1.60; middle toe, 2.30.

F. collaris. Wing, 7.50 inches; culmen, 1.80; greatest width of bill, .85, least width, .65; tarsus, 1.35; middle toe, 2.00.

The Red-head Duck has a distribution more or less general throughout North America, breeding in high northern latitudes down to about 44°, and frequenting in the winter the southern portions of the continent as far as Mexico. It is found both on the Atlantic and the Pacific coasts.

It was met with on the western coast of Mexico, near Mazatlan, by Colonel Grayson, and in Northeastern Mexico and Southern Texas by Mr. Dresser. It is given as occurring on the Pacific coast at Vancouver Island by Mr. R. Browne. On the coast of California, according to Dr. Cooper, the Red-head is not so common as the Canvas-back, but it has been obtained from San Francisco to San Diego, and throughout the interior in the winter. Dr. Heermann believes that some of these Ducks breed in the marshes of the Sacramento Valley; and he mentions obtaining several females there in June with their breasts denuded of feathers, as is usually the case with Ducks when sitting on their eggs. Mr. J. A. Allen found this species in great abundance in the valley of Great Salt Lake, Utah.

Richardson states that this species breeds in all parts of the Fur Countries, from the fiftieth parallel to their most northern limits. Mr. Boardman informs me that in the summer of 1871 he found a pair of Red-heads which were evidently breeding in the vicinity of Calais, Me. This statement, coupled with that of Dr. Heermann, goes to show that this species, on both the eastern and the western shores, breeds much farther south than the limit assigned by Dr. Richardson. Its nest and eggs were afterward, in the summer of 1874, actually found by Mr. William Bryant about thirty miles north of Calais. The presence of this bird about Calais had been previously noted by Mr. Boardman during each summer, and he had not doubted that a few pair remain about there for the purpose of rearing their young. They have not been seen there in any large number, and they are rare in Massachusetts, a few only being occasionally obtained in the late fall on the southern shores of Cape Cod.

The Red-head is somewhat abundant on Long Island — where, however, according to Giraud, it is not so common as many other species. It is seldom seen in any considerable numbers west of Babylon, being chiefly limited to the eastern part of South Bay, where it is sometimes seen in company with the Canvas-back. Both species not infrequently feed on the same plant, the former eating the stems, and the latter the roots; these are tender and juicy, and it is to them that the delicate flavor of the flesh of the Canvas-back is due. The Red-headed Duck is also excellent eating, and commands a high price in the New York market — indeed, it is not infrequently sold to the inexperienced as the genuine Canvas-back, which it so strongly resembles.

About Egg Harbor, N. J., this Duck is more common than it is on Long Island; but it is not so abundant there as it is on Chesapeake Bay. Mr. Giraud states that frequent attempts have been made to domesticate this species, and in one instance, at least, with considerable success. A Red-headed Duck in the possession of Mr. Edmund Powell, of Westbury, L. I., became as completely reconciled to its new home as if it had never known any other course of life. The Red-headed Duck makes its appearance on the Long Island coast usually about the first of November, and leaves for its northern breeding-places early in March.

A writer in "Doughty's Cabinet" (I. 41) gives the last of October as being nearly the date of its first arrival in the waters of the Chesapeake. These birds from that time on appear in large flocks, and very rapidly distribute themselves over the Bay. Much difference of opinion has been expressed as to the excellence of the flesh of this species; but the writer quoted believes that this diversity of view is due — in part, at least — to the difference of the food of the bird in different localities. On the Chesapeake, where it feeds in company with the Canvas-back, it is said to be hardly second even to that Duck in the delicacy of its flavor. It is not so restricted to a few localities in Eastern North America as is the Canvas-back; and while abundant in Chesapeake Bay, is also found in considerable numbers in many other regions. It feeds on the blades of the *Vallisneria* grass when unable to obtain the roots. It is frequently shot in the waters of the Hudson, the Delaware, and, later in the winter, in the streams of the Southern States. Dr. Bryant found it very common in winter at the Bahamas, where it was the most abundant of all the Ducks, occurring in large flocks, acres in extent.

At New Orleans, where this Duck was then commonly known as the *Dos gris*, or Gray-back, Audubon states that it arrives in great flocks early in November, and departs late in April. It is very abundant on lakes St. John, Pontchartrain, and Borgne, keeping in large flocks, and not mingling with any other species. There its food seems to consist of small fishes, for which it is continually diving. It is caught in nets in great numbers, and is easily kept in confinement, as it feeds greedily on crushed Indian corn. In 1816 these and other Ducks were thus taken by the thousand by a Frenchman, who used to send them to market alive in cages.

Audubon saw none of these birds during the spring and summer he spent in Labrador, nor did he hear of any in Newfoundland; and on his excursion to Kansas none were seen to the west of the Southwest Pass. In this, however, others have been more successful; and this bird has been found on the Texan coast. He mentions it as abundant in November, and afterward in December, in the marshes near St. Augustine, in East Florida. It was shy, and kept in company with the Mallards and other Ducks in shallow fresh-water ponds, at some distance from the sea-shore. In South Carolina he was informed that this species had latterly become much more abundant than it was twenty years before, especially on the Santee River. It is an expert diver when in deep bays and estuaries; but in shallow ponds in the interior it dabbles in the mud in the manner of the Mallard, and its stomach is filled with tadpoles, small water-lizards, and blades of grass. At other times Audubon found acorns and beechnuts, as well as snails and fragments of the shells of unios, together with much gravel. The notes of this Duck are said to be rough and coarse, and not to have as much resemblance to those of species peculiar to fresh water, as the cries of birds of this family generally have. Its flight is hurried, the bird rising from the water in a confused manner, but being able to continue long on the wing. This bird produces with its wings, when in motion, a clear whistling sound. Audubon regarded this species as identical with the Pochard (*Æ. ferina*) of Europe.

According to the observations of Professor Kumlien, this species is quite common in the waters of Southern Wisconsin, both in the spring and fall. It is not known to occur there in the summer, and is later in its arrival in the fall than the Canvas-back. Mr. B. F. Goss, however, writes me that he has known this species to breed occasionally, but rarely, in his neighborhood — Pewaukee, Wis. On the 24th of May, 1868, he camped on an island in Horicon Lake, and remained there four days. This lake is twelve miles long and two broad, with numerous islands and grassy bogs; these were covered to the water's edge with a scattering growth of trees, with thick bushes and weeds. Here various Ducks were breeding in great numbers. On one island, containing about half an acre, the nests were only a few feet apart; and as he approached, the Ducks rose from their nests in a great flock, and it was difficult to identify the few nests of other species among the great multitude of Mallards. He found eight nests of the Red-head, which were almost always in thick grass or weeds, and near the water, none being more than twenty feet distant. The nests were sometimes slightly elevated, made of any convenient loose material, rather small, and not very neatly finished. They contained from one to five eggs; but their full complement was probably nine or ten.

This Duck was found breeding in great numbers on Manitoba Lake, on Shoal Lake, and in the Selkirk Settlement by Mr. Donald Gunn.

Dr. Kennerly observed it at Boca Grande, in Chihuahua, in March, 1855. It was also found on the Janos and Conalitos rivers, at various points, at this season, generally going in pairs, rarely in large flocks, and being very shy.

Eggs of this species, procured by Mr. Goss, and now in the Smithsonian Museum (No. 15176), are of a grayish white with a slight tinge of cream-color. They vary in breadth from 1.70 to 1.75 inches, and from 2.35 to 2.40 in length. Those from the Selkirk Settlement (Smithsonian Institution, No. 14190), measure 1.70 by 1.35.

GENUS **CLANGULA**, BOIE.

Clangula, BOIE, Isis, 1822, 564. — "FLEMING, Philos. Zool. II. 1822, 260" (type, *Anas clangula*, LINN.). (Cf. DRESSER, B. Eur. Pt. XLVI. Dec. 1875; COUES, Bull. Nutt. Orn. Club, April, 1880, 101.)

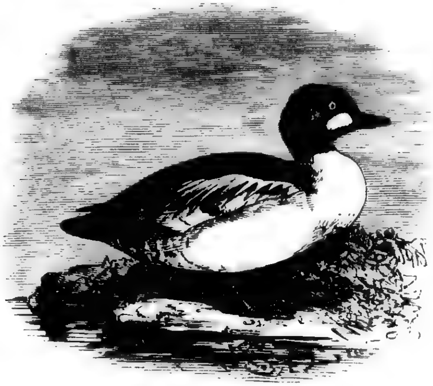
Glaucion, KAUP, Ent. Europ. Thierw. 1829, 53 (same type; preoccupied in *Mollusca*; OKEN, 1816).

Bucephala, BAIRD, B. N. Am. Aug. 19, 1858, 795 (type, *Anas albeola*, LINN.).

CHAR. Bill much shorter than the head, deep through the base, the lateral outlines converging toward the tip, which is rather pointed than rounded; lamellæ completely hidden by the overhanging edge of the maxilla; nostrils situated near the middle of the bill; tarsus longer than the culmen; tail rather long (about half the wing), of sixteen feathers. Colors, pied white and black in the male, brown and white in the female.

This genus comes nearest in its characters to *Histrionicus*, but is quite distinct. Three species are known, their special characters being as follows: —

COM. CHAR. *Adult:* Head and upper part of the neck black, with metallic reflections, and with a patch of white, varying in form with the species; lower part of the neck, all round, entire lower parts, part of scapulars, wing-coverts, and secondaries white; other upper parts black. *Female:* The black replaced by brown, the white absent from the head (except in *B. albeola*), and more restricted elsewhere.



C. glaucion.

A. Size rather large (wing, 7.40 inches or more); male with a white spot before the eye; female without white on the head.

1. **C. islandica.** *Male:* White patch on lores wedge-shaped, the head glossed with bluish violet; a broad black bar between the white of the middle and greater wing-coverts. *Female:* Head dark sepia or purplish snuff-brown; a distinct black bar across the ends of the greater wing-coverts. Wing, 8.25-9.40 inches; length of bill to point of basal angle, 1.40–1.80; tarsus, 1.30–1.60; middle toe, 2.15–2.50. *Hab.* Northern North America, breeding far southward (at least to Colorado) in higher portions of Rocky Mountains; Greenland; Iceland; accidental in Europe.
2. **C. glaucion.** *Male:* White patch on lores roundish; white patch of wings not interrupted by a black bar. *Female:* Head grayish umber-brown; white wing-patch usually continuous.
   - *a. Glaucion.*[1] *Male adult:* Wing, 8.50 inches; bill from tip to basal angle, 1.70–1.80; tarsus, 1.30; middle toe, 2.20. *Hab.* Palæarctic Region.

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[1] CLANGULA GLAUCION, Linn. The Golden-eye.
Anas clangula, LINN. S. N. ed. 10, I. 1758, 125; ed. 12, I. 1766, 201. — NAUM. Vög. Deutschl. XII. 1844, 162, pl. 316.
Glaucion clangula, KAUP, Naturl. Syst. 53. — KEYS. & BLAS. Wirb. Eur. 1840, lxxxvi.
Anas glaucion, LINN. S. N. ed. 10, I. 1758, 126; ed. 12, I. 1766, 201.
Clangula glaucion, BREHM, Vög. Deutschl. 929. — GRAY, Gen. B. III. 622; Cat. Brit. B. 1863, 202.
Anas hyemalis, PALL. Zoog. Rosso. As. II. 1826, 270.
Clangula chrysopthalmos, STEPH. Gen. Zool. XII. pt. ii. 182, pl. 56. — BONAP. Comp. List, 1838, 58. — MACGILL. Man. II. 183.
Clangula vulgaris, FLEM. Brit. Anim. 1828, 120.
Clangula leucomelas and *C. peregrina*, BREHM, Vög. Deutschl. 1831, 927.
Golden-eye, YARR. Brit. B. ed. 2, III. 368, fig.; ed. 3, III. 371, fig.

β. Americana. *Male adult:* Wing, 9.25 inches; bill to basal angle, 1.85; tarsus, 1.60; middle toe, 2.50. *Hab.* North America.

B. Size small (wing less than 7.00 inches); male with a large white patch on each side of the occiput (confluent behind); female with a white spot on the auricular region.

3. **C. albeola.** Wing, 6.00–6.75 inches; bill from tip to end of basal angle, 1.15–1.25; depth at base, .55–.70; width, .45–.60; tarsus, 1.15–1.25; middle toe, 1.80–2.00. *Hab.* North America.

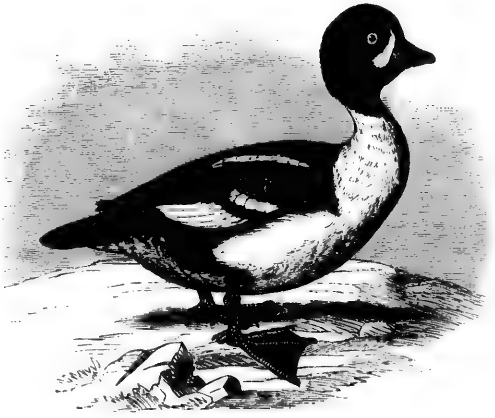
Clangula islandica.

BARROW'S GOLDEN-EYE.

Anas islandica, GMEL. S. N. I. ii. 1788, 541.
Bucephala islandica, BAIRD, B. N Am. 1858, 796; Cat. N. Am. B. 1859, no. 594. — COUES, Key, 1872, 290; Check List, 1873, no. 506; Birds N. W. 1874, 577.
Clangula islandica, BONAP. Cat. Met. Ucc. Eur. 1842, 74. — RIDGW. Nom. N. Am. B. 1881, no. 619. — COUES, Check List, 2d ed. 1882, no. 726.
Clangula Barrovii, SW. & RICH. F. B. A. II. 1831, 456, pl. 70 (♂).
Fuligula Barrovii, NUTT. Man. II. 1834, 444.
Clangula scapularis, BREHM, Vög. Deutschl. 1831, 932.
Fuligula clangula, var., AUD. Orn. Biog. V. 1839, 105, pl. 403; Synop. 1839, 292 (part); B. Am. VII. 1843, 362 (part; describes the species as supposed summer plumage of *B. clangula*).

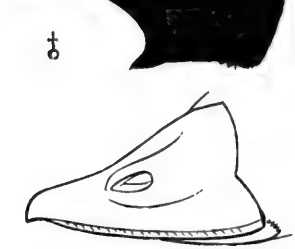
HAB. Northern North America, south in winter to New York, Illinois, Utah, etc.; breeding in the high north, and south in the Rocky Mountains to Colorado. Greenland; Iceland; accidental in Europe.

SP. CHAR. *Adult male:* Head and upper half of the neck glossy blue-black, with reflections of green, blue, and violet, according to the light; a somewhat wedge-shaped vertical patch of white across the anterior half of the lores, bordering the lateral base of the bill, the upper part forming an acute angle on each side of the forehead, the lower part rounded. Upper parts velvety black, with a soft bluish-violet tinge; outer row of scapulars marked with a mesial cuneate stripe of satiny white, the greater portion of the stripes concealed, so that the exposed portion forms roundish or oblong spots; middle wing-coverts white, producing a broad bar; exposed terminal half of greater coverts, with the whole of the exposed portion of the five or six inner secondaries, white,



C. islandica.

forming a large, somewhat cuneate, patch. Outer feathers of the sides and flanks widely edged exteriorly with deep black; femoral region and sides of crissum dull black. Lower half of neck (all round) and entire lower parts (except as described) pure white. Bill black (in skin); iris bright yellow; legs and feet pale. *Adult female:* Head and upper half of the neck dark sepia-brown, considerably darker and somewhat more purplish than in the female of *C. glaucion;* lower part of the neck, all round, white, sometimes tinged with gray on the nape. Upper parts dark grayish-brown, the scapulars, interscapulars, and smaller wing-coverts tipped with lighter ash-gray; last two or three rows of middle wing-coverts tipped with white, forming a broken, rather narrow, transverse patch; greater coverts with the terminal half of their exposed portion white, as in the male, but distinctly tipped with blackish, forming a conspicuous dusky bar between the white of the coverts and that of the inner secondaries. Jugulum and sides ash-gray, the feathers darker and more brown beneath the surface, the breast lighter and more uniform, the flanks darker; other lower parts pure white. Bill usually party-colored (black and yellow), but sometimes wholly black.



Male.

Adult male: Wing, 9.00–9.40 inches; culmen, 1.65–1.80; depth of bill at base, .95–1.10, width .75–.85; tarsus, 1.50–1.60; middle toe, 2.45–2.50. *Adult female:* Wing, 8.25–8.75 inches; culmen, 1.40–1.60; depth of bill, .85–.90; width, .70; tarsus, 1.30–1.60; middle toe, 2.15–2.20.

Bearing in mind the salient points of difference, as given on p. 40, there need never be any difficulty in distinguishing the adult male of this very distinct species from that of *C. glaucion.* With the female, however, the case is very different; the two species being so much alike that, with the series at our command (about twenty specimens, including six unquestionably referable to *C. islandica*), we must acknowledge our inability to give infallible points of distinction. The examples which are known to represent *C. islandica* differ from the positively determined females of *C. glaucion* in the following respects: (1) The color of the head and upper half of the neck is considerably darker, being a rich sepia- or snuff-brown, rather than grayish brown; (2) the greater wing-coverts are distinctly tipped with black, forming a conspicuous dusky stripe between the two larger white areas of the wing, which in *C. glaucion* are (usually, at least) merged into one continuous space. Further than these we find no distinction, while indeed some examples are so decidedly intermediate in both respects as to render it quite uncertain to which species they belong. Of the two characters named, however, the color of the head is far the more constant, and may, perhaps, be found quite distinctive.

Barrow's Golden-eye, or the Rocky Mountain Golden-eye, as it was very appropriately called by Nuttall, is almost exclusively a North American species, occurring in the interior among the mountains, from Southern Colorado, and probably even farther south, to the Yukon on the northwest, and Greenland on the east. It is also a resident in Iceland, and in a very few instances straggles into Europe. A single individual was taken in Spain by Mr. Howard Saunders, and four individuals are recorded as having been taken on the coast of Norway at different times and places. With these exceptions, it is not known to be a European species.

Up to the present time this species has been strangely overlooked by some writers, while the nature of its geographical distribution has been entirely misunderstood. It was unknown to Wilson, and it escaped the notice of Audubon; and, more recently, Dr. Coues refers to it in different works as belonging to Arctic America and to Northern Europe, mentioning it as being the most northerly of the genus, and as having apparently a Circumpolar distribution, while I can find no evidence that it is either of Arctic or Circumpolar occurrence. It has not been found east of Iceland, either in Europe or Asia; neither is it known to nest anywhere within the Arctic Circle.

It is both a northern and a mountain species, breeding in Greenland, Iceland, and Alaska up to 64° 30′ north latitude, and occurring throughout the Rocky Mountains from high northern regions at least as far to the south as 38° north latitude. It is also seen during the breeding-season in Maine and New Brunswick, and probably throughout the British Provinces generally. It is found on the Atlantic coast in winter as far south at least as Southern Massachusetts, and on the Pacific up to a limit not yet ascertained.

Its presence in the more northerly portion of the Rocky Mountains, among the valleys, was first noted in 1831 by Dr. Richardson, who describes its habits as being very similar to those of the Common Golden-eye; and, three years later, Mr. Nuttall ("Water Birds," p. 444) mentions it as occurring in the Rocky Mountains; but whether on the authority of his own observations or of those of Dr. Richardson, he does not state. More recently, Dr. Cooper was the first of our naturalists to recall the fact of its being found among the mountains of the United States. (See "Fauna of Montana," Am. Nat. III., p. 83.)

Holböll and Reinhardt have also recorded it as being a bird of Greenland, in the southern part of which country it breeds; and it has been procured in the neighborhood of Godthaab and Nenortalik. Its range is there restricted to a narrow belt between 63° 45′ and 64° 30′. North of this the natives have no knowledge of its occurrence.

Mr. Boardman informs me that a few birds of this species are seen each summer in the neighborhood of Calais, Me., and that they undoubtedly breed there, but that as yet he has not been able to discover their nests. They are somewhat rare in the region at that season, but become much more common on the St. Croix River in the winter, and also in the Bay of Fundy.

Mr. William Brewster, of Cambridge, obtained an adult female in the flesh from Cape Cod, Mass., Dec. 7, 1871. Since then he has met with several females and two adult males in the Boston Market, most of which were shot within the limits of Massachusetts. It is now thought to be more common on that coast in the winter than had been previously supposed.

Mr. Nelson states that Barrow's Golden-eye is a winter resident on Lake Michigan, and that it is found at that season irregularly throughout the State of Illinois. This bird was obtained on the Wabash, at Mount Carmel, in December, 1874, by Professor Stein; and Mr. Nelson has observed it at Chicago. Dr. Hoy procured a specimen at Racine in 1860. It is probably not uncommon on Lake Michigan; but the winter season is unfavorable for procuring it, or even for ascertaining its numbers.

This species has been procured by Dr. Hayden in the interior of the United States, and subsequently, in 1872, by Mr. Henshaw, who is inclined to regard this as a species occurring regularly and in considerable numbers on Utah Lake, where two specimens were taken by him, and where — as he was assured by the hunters — some are shot every winter, although this species is less abundant than the common Golden-eye, from which it is easily distinguished.

Mr. Edwin Carter, of Colorado, was probably the first person actually to secure the nest and eggs of this species, whose presence in the mountains of that region had been well known to him for several years. A set of seven eggs obtained by him is now in the Museum of Comparative Zoology of Cambridge. Mr. Carter writes me that "the usual nest complement of Barrow's Golden-eye is from six to ten, varying with the age and vigor of the parents." In 1876 he took a nest of ten eggs, which contained large embryos, and also another set of six; another clutch (that sent to the Museum) consisted of seven. He writes that he has met with several young broods numbering from six to eight, and one of ten. These birds nest in hollow trees; and it is surprising to see in what small cavities they in some instances can accommodate themselves. The following season he examined a great many trees, and every one that had a suitable opening either contained an occupant or indicated former nesting by egg-shells and other marks.

This species is not known to occur in California; but Dr. Cooper has no doubt that it will yet be found among the mountains of the northeastern portion of the State. Mr. Dall speaks of it as present, but rare, on the Yukon River; and specimens were obtained by Bischoff at Sitka. An individual was taken by Mr. M. McLeod in the vicinity of Fort Anderson, June 29, 1863. On the 14th of June, 1864, Mr. MacFarlane obtained a male example at Fort Anderson. It had been in the habit of flying over the fort for several evenings in succession, and was at length shot on a small lake. The female, without doubt, had her nest somewhere in the vicinity, but she eluded his endeavors to discover the place. Mr. MacFarlane adds that this species may be classed among the rarest of the Ducks visiting that region.

Mr. C. W. Sheperd, in his visit to Iceland, found this Duck breeding on a small island in the Lake of Mý-vatn, in the northern part of that island. This islet was occupied almost exclusively by two species — the Golden-eye and the *Mergus serrator*. The soil was composed of broken lava, and both species were breeding in holes, some of their nests being entirely out of reach, in the cracks and crevices of the lava. The two species were found to live together in the most familiar manner, and upon the best of terms. A female Merganser was found sitting on a nest evidently not her own, but which contained four eggs belonging to *B. islandicus;* the difference between the eggs of the two species being so strongly marked as to admit of no possibility of confounding them.

Two eggs of this species from the Yukon (Smithsonian Institution, No. 9547) measure 2.40 by 1.60 inches, and 2.40 by 1.70; two from Iceland (Smithsonian Institution, No. 13409), 2.55 by 1.80, and 2.45 by 1.80. They are of a uniform deep grayish pea-green color.

Clangula glaucion americana.

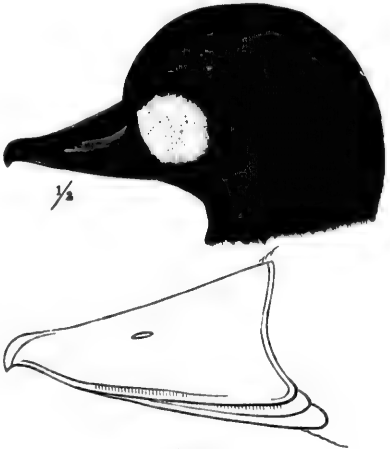
THE AMERICAN GOLDEN-EYE.

Anas clangula, WILS. Am. Orn. VIII. 1814, 62, pl. 67, fig. 5.
Fuligula clangula, BONAP. Synop. 1828, 393. — NUTT. Man. II. 1834, 441. — AUD. Orn. Biog. IV. 1838, 318, pl. 342; Synop. 1839, 292; B. Am. VI. 1843, 362, pl. 406 (includes *islandica*).
Bucephala clangula, COUES, Key, 1872, 290; Check List, 1873, no. 505; B. N. W. 1874,576.
Clangula glaucium, COUES, Check List, 2d ed. 1882, no. 725.
Clangula vulgaris, SW. & RICH. F. B. A. II. 1831, 456.
Clangula americana, BONAP. Comp. List, 1838, 58.
Bucephala americana, BAIRD, B. N. Am. 1858, 796; Cat. N. Am. B. 1859, no. 593.
Clangula glaucium americana, RIDGW. Pr. U. S. Nat. Mus. Vol. 3, 1880, 204; Nom. N. Am. B. 1881, no. 620.

HAB. The whole of North America, breeding from Maine and the British Provinces, northward; south to Cuba in winter.

SP. CHAR. *Adult male:* Head and upper half of neck black, glossed with dark green, varying to violet; a roundish white spot between the rictus and the eye, but not reaching to the latter; back, inner scapulars, tertials, rump, and upper tail-coverts, deep black; lower half of the neck (all round), lower parts, outer scapulars, posterior lesser, middle and greater wing-coverts, and secondaries, pure white; anterior lesser wing-coverts, and outer edges of scapulars and flank feathers, and concealed portion of greater coverts, deep black; primaries blackish dusky; tail dull slate; sides of the anal region behind the flanks clouded with grayish. Bill deep black; iris bright yellow; feet orange-yellow, with dusky webs. *Adult female:* Similar to that of *C. islandica*, but head and neck hair-brown or grayish brown, rather than purplish sepia or snuff-brown, and white on the wing usually not interrupted by a distinct black bar.

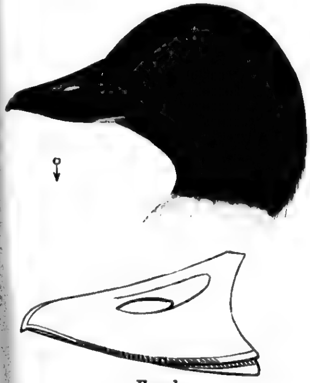
Downy young:[1] Upper parts generally, including the whole upper half of the head, to the rictus, and considerably below the eyes, the jugulum, sides, and thighs, deep sooty brown, lighter and more grayish on the jugulum; the brown of the upper parts relieved by about eight spots of grayish white, as follows: one on the posterior border (secondary region) of each wing; one on each side the back; one on each side the rump, at the base of the tail, and one on each flank just before the brown of the thighs. Chin, throat, and cheeks pure white, in abrupt and decided contrast to the brown, which entirely surrounds it; remaining lower parts grayish white. Bill brownish; nail yellowish.



Male.

Adult male: Total length, about 18.50 to 20.00 inches; extent, 31.00; wing, about 9.25; length of bill, from tip to end of basal angle, 1.85; depth at base, 1.00; width, .85; tarsus, 1.60; middle toe, 2.50. *Adult female:* Total length, 16.50; extent, 26.75; wing, 8.25; culmen, 1.60; depth of bill at base, .90, width, .70; tarsus, 1.40; middle toe, 2.20.

As stated under the head of *C. islandica* (p. 42), we are unable to discover, in the material at our command (consisting of upward of twenty specimens, including six unquestionable *C. islandica* and many more equally undoubted *C. glaucion*) positive points of distinction between the female of the common and of that of Barrow's Golden-eye. All specimens, however, possessing no dusky bar across the ends of the greater wing-coverts, thus interrupting the white wing-patch, should probably be referred to the present species. The females of both species are so variable in every character we have tested that it is quite impossible to say to which some examples should be referred.[2]



Female.

Upon comparing a series of two males and as many females of the European Golden-eye (*B. clangula*) with a very large number of American specimens, we are unable to detect any difference in coloration. The difference in size, however, is so great, and moreover constant, as fully to justify their separation as distinct races.

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[1] Described from No. 23261, New Brunswick; G. A. Boardman.

[2] In a paper entitled "On the Golden-eyes, or Garrots, in Nova Scotia," Mr. J. Bernard Gilpin arrives at the same conclusion, after careful study of specimens in the flesh (see pp. 398, 399). This paper, which, in its way, is quite a monograph, is evidently an extract from some larger publication, the title of

The American Golden-eye, "Whistler," and "Great Head," as it is variously known in different parts of the United States, has a very extended distribution, being found as far south as Florida and Mexico during the winter, and in summer to the highest northern limits. It breeds from the 42d parallel northward, and is found in winter on both coasts from about the same parallel southward.

Captain Blakiston records it as having been first seen by him on the Saskatchewan, at Fort Carlton, on the 10th of April. He also received specimens from Hudson's Bay. Mr. Bernard Ross mentions finding it along the Mackenzie River as far north as the Arctic coast. According to Richardson, it frequents the rivers and fresh-water lakes throughout the Fur Countries in great numbers. In that region it appears to be by no means shy, allowing the sportsman to approach sufficiently near; but it dives so dexterously at the flash of the gun or at the twanging of the bow, and is so difficult to kill, that the natives believe it to be endowed with a supernatural power.

This species was found by Colonel Grayson near Mazatlan, in Western Mexico, where, as he states, it is common during the winter months. A single specimen is reported as having been taken in Bermuda in April, 1854. I can find no record of its occurrence in any of the West India Islands, though its presence in Southern Florida is suggestive of an occasional visit to Cuba.

The nest of this species was found by Mr. Lockhart on the Yukon, June 18. It contained six eggs. The nest was in a hole high up in a poplar-tree, about an arm's length deep from the mouth of the hole. Mr. Dall met with it at Nulato, where it was the first Duck killed, May 3, 1868. It is always early in arriving, and is common both on the Yukon and on the Pacific coast, near the mouth of that river. Its eggs were obtained from near Pastolik from the marshes. The skin of this Duck, which, after being stuffed and decorated with beads, had been used as an ornament in the lodge, was bought from some Indians on the Yukon, near the Mission.

Mr. R. Browne met with this species on the Pacific at Vancouver Island. Dr. Cooper states that it is abundant along the whole Pacific coast from Puget Sound to San Diego, and beyond; and although not common on the fresh waters of the interior, it frequents Salt Lake, and probably other lakes east of the Sierra Nevada. It is generally recognizable from a distance by the shrill noise which it makes as it rises slowly from the surface of the water when starting to fly. It seems to be perfectly silent in California during the winter, making no noise, except that produced by the whistling of its wings. It is generally shy; though, trusting to its dexterity in diving, it will allow of a very near approach. This species dives so very quickly at the flash of the powder that it could not be shot with the old-fashioned flint-lock. Its food consists of small fish, crabs, and marine plants, and its flesh is in consequence rather fishy, and inferior for the table. At Unalashka Mr. Dall found it a winter visitor, migrating landward in the spring.

Mr. George A. Boardman has found this species common in the neighborhood of Calais during the summer months, where it breeds in stumps and in hollow trees. In Massachusetts it is quite abundant both in the spring and fall, many of these Ducks wintering in the State at places where open water can be found. Large flocks often spend each winter in the open parts of Charles River, between the Mill-dam and Cambridge Bridge. In very severe weather, if that portion of the river is obstructed by ice, the birds are temporarily driven to the open harbor, but invariably return when the ice is broken up. They are excessively shy, and unapproachable when

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which we are unable to quote, since no clew is given in the extra edition of the paper in question. Dr. Coues (see "Key to North American Birds," p. 290) also admits his inability to distinguish the females of the two species.

disturbed, but generally appear as much at home in this land-locked basin as if in their wild retreats, swimming up to within a few rods of the dwellings in Beacon Street, or diving under the much-frequented bridges.

On Long Island, as Mr. Giraud states, the Golden-eye is better known among the hunters as the "Whistler," from the peculiar noise produced by its wings when flying. By others it is also called the "Great-Head," from its beautifully rich and thickly crested head. On that island it is said to be a not very abundant species, arriving there in company with other migratory Ducks. He met with it in the fall and spring on the Delaware and in Chesapeake Bay, as well as at Egg Harbor and on Long Island. In the interior it is said to be much more common. Its food seemed to consist of small shell and other fish, which it procures by diving. In the fall its flesh is said to be about equal or even superior to that of the Scaup Duck. It is very shy, and is decoyed with great difficulty. In stormy weather it often takes shelter in the coves with the Scaup Duck, and there it may be more readily killed. It usually flies very high, and the whistling sound produced by the action of its wings is the only noise that it makes as it proceeds.

Audubon found the Golden-eye abundant in South Carolina during the winter, where at times it frequented the preserves of the rice-planters. He also met with it at that season on the watercourses of Florida. In the Ohio River he found it preferring the eddies and rapids, and there it was in the habit of diving for its food. Naturally the Golden-eye is chiefly seen in company with the Buffle-head, the Merganser, and other species that are expert divers like itself. When wounded, unless badly hurt, its power of diving and of remaining under water is so remarkable that it cannot be taken. In 1842 Mr. Jonathan Johnson, of Nahant, shot a male of this species, wounding it in the head and stunning it. The back part of the skull had been shot away, and the bird was supposed to be mortally wounded. It, however, appeared to recover, fed readily on corn, and became quite tame. It was purchased by the late Thomas Lee, Esq., and kept by him in an enclosure. But the cover of its enclosure being one day incautiously opened, the bird, which had seemed reconciled to confinement, suddenly bounded upward through the open space, and disappeared.

The flight of the Whistler is powerful, rapid, and protracted. On rising from the water it proceeds at first very low, and does not ascend to its usual height until it has gone a considerable distance. Although generally a very silent bird, yet just before it leaves for its breeding-places in the spring, the male has a rough croaking note; and this note may also be heard if, having fallen wounded to the ground, it is taken alive.

Audubon pronounces the flesh of this Duck fishy and unfit for food. This may be true where it has been rendered rank and strong by some peculiar kind of food, but birds of this species taken near Boston that I have eaten were far from being unpalatable. It feeds on shellfish, mollusca, marine vegetables, and seeds, and in confinement will readily eat corn and grain.

In Southern Wisconsin, according to the observations of Professor Kumlien, Ducks of this species are found sparingly in the spring, but are more abundant in the fall, a few being known to pass the winter in that locality, wherever they can find deep and open water. They do not, however, remain there during the summer.

Eggs of this species closely resemble those of the *islandica*, being uniformly of a pale grayish pea-green color. Two from Moose River, Southern Hudson Bay (Smithsonian Institution, No. 4338), measure 2.55 by 1.70 inches, and 2.50 by 1.70. Three from Fort Rae (No. 5032), Great Slave Lake, are of a deeper green, and measure, two, 2.35 by 1.70 inches, and one 2.30 by 1.70.

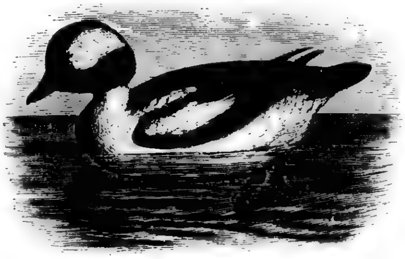
Clangula albeola.

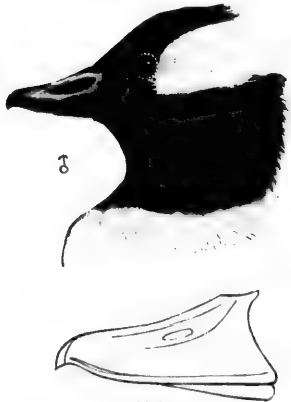
THE BUFFLE-HEADED DUCK; BUTTER-BALL.

Anas albeola, LINN. S. N. ed. 10, I. 1758, 124; ed. 12, I. 1766, 199. — WILS. Am. Orn. VIII. 1814, 51, pl. 62, figs. 2, 3.
Fuligula albeola, BONAP. Synop. 1828, 394. — NUTT. Man. II. 1834, 445. — AUD. Orn. Biog. IV. 1838, 217, pl. 225; Synop. 1839, 293; B. Am. VI. 1843, 369, pl. 408.
Clangula albeola, STEPHENS, Shaw's Gen. Zool. XII. ii. 1824, 184. — Sw. & RICH. F. B. A. II. 1831, 458. — RIDGW. Nom. N. Am. B. 1881, no. 621. — COUES, Check List, 2d ed. 1882, no. 727.
Bucephala albeola, BAIRD, B. N. Am. 1858, 797; Cat. N. Am. B. 1859, no. 595. — COUES, Key, 1872, 290; Check List, 1873, no. 507; Birds N. W. 1874, 577.
Anas bucephala, LINN. S. N. ed. 10, I. 1758, 125; ed. 12, I. 1766, 200 (♂).
Anas rustica, LINN. tt. c. 125, 201 (♀).

HAB. North America, breeding northerly; migrating south in winter to Cuba and Mexico.

SP. CHAR. *Adult male:* Head and upper half of the neck rich silky metallic green, violet-purple and greenish bronze, the last prevailing on the lower part of the neck, the green on the anterior part of the head, the purple on the cheeks and crown; a large patch of pure white on the side of the head, extending from the eye back to and around the occiput; lower half of the neck, lower parts generally, wing-coverts, secondaries, and outer scapulars pure white, the latter narrowly, and the feathers of the flanks more widely, edged with black; posterior parts of the body beneath tinged with pale ash-gray; upper tail-coverts light hoary gray; tail slate-gray, the shafts black. Bill bluish plumbeous, dusky on the nail and at base; iris very dark brown; legs and feet pinkish, or lilaceous, white. Total length, about 14.50 inches; extent, 24.50; wing, 6.75–6.90; culmen, 1.10–1.15; tarsus, 1.30; middle toe, 1.90–2.00. *Adult female:* Head, neck, and upper parts generally dusky grayish brown; an oblong or somewhat ovate white longitudinal patch on the auricular region, and the inner secondaries (sometimes also the greater wing-coverts, except at ends), white; lower parts white, tinged with brownish gray posteriorly, anteriorly, and laterally. Bill dusky, inclining to plumbeous at end and along commissure; iris very dark brown; legs and toes dilute lilac-pink, the webs and joints darker. Length, about 12.50 inches; extent, 21.00; wing, 5.90–6.00; culmen, .95–1.00; tarsus, 1.15–1.20; middle toe, 1.75.


C. albeola.

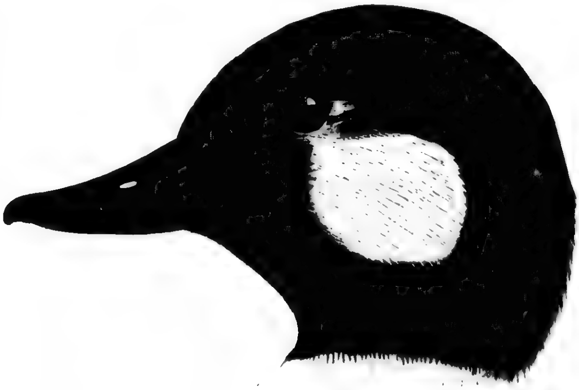


Male.

There is very little variation among the males of this species. The females vary in the markings of the wing, some having the greater coverts white, tipped with dusky ; while in others only the inner secondaries are white.

This species, peculiar to this continent, but of accidental or occasional occurrence in Europe, has an extended distribution throughout North America, being found in winter in the more southern States, in the West India Islands, and on both coasts of Mexico. It goes as far north as Greenland on the northeast, and Alaska on the northwest, coast.

An adult female specimen was obtained at Godthaab, in Greenland, by the elder Reinhardt. Mr. Bernard Ross met with it throughout the whole valley of the Mackenzie, to the very mouth of that river. It was taken on the Saskatchewan by Captain Blakiston, who also received it from Hudson's Bay.



Female (natural size).

This species is said by Dr. Richardson to frequent the rivers and fresh-water lakes throughout the Fur Countries in great numbers. It is very far from being shy, will allow the sportsman to approach quite near, and then dives so dexterously at the flash of the gun, and is so very difficult to kill, that the natives believe it to possess supernatural powers, and call it the "Spirit Duck."

Mr. Dall mentions it as not uncommon on the Yukon, where it breeds. It is abundant at the mouth of the Yukon River, where there are no trees except scrubby willows and alders, and it probably breeds there. Specimens were obtained by Mr. Bischoff at Sitka. It was found on Vancouver Island by Mr. R. Browne.

Dr. Cooper writes that he has found this little Duck very abundant throughout California, and that he has traced it as far north as latitude 49° during the colder months. It arrives in California about October, and remains as far south as San Diego as late as April 20. It is known to frequent both fresh and salt water; and seems to obtain an abundance of food everywhere, becoming so very fat as to acquire the general appellation of "Butter-ball." Its expertness in diving enables it to obtain food in deep water more readily than most other Ducks.

Dr. Gundlach mentions this species as a visitant to Cuba; and Major Wedderburn states that it is occasionally observed in Bermuda in the winter. Mr. Dresser received the skin of a male bird which had been taken at Fort Stockton; and he was informed that specimens were occasionally found at the Boca del Rio, in Southwestern Texas.

Mr. Boardman informs me that this Duck is occasionally found in the neighborhood of Calais, where a few remain and breed, nesting in trees. It is rare, however, and he has not met with its nest. In Massachusetts it is more or less common from September to April, being absent only during the severest weather, and in mild winters remaining throughout the season.

This species is variously known as the "Dipper," from its dexterity in diving, the "Buffle-head," from the apparently disproportionate size of its neck and head, as well as "Butter-box" or "Butter-ball," and "Spirit Duck." Mr. Giraud states that he has met with it in various parts of the United States, and has found it during the spring and autumn dispersed throughout the Union, visiting the interior as well as the sea-coast. It dives so dexterously that it can be shot only with the greatest difficulty when sitting on the water. It is an excellent swimmer, and flies swiftly, when on the wing uttering a deep guttural note. Its food consists chiefly of small fish. It is generally in fine condition, but is not considered a superior bird for the table. It is generally met with in pairs until the appearance of spring, when it is seen in small flocks. It arrives in Long Island in October, and remains until the latter part of April, when it leaves for the north. On the coast of New Jersey it is most generally known either as the "Butter-box," or "Butter-ball." A writer in "Doughty's Cabinet" (I. 41), who claims to have studied the habits of this Duck on the waters of Chesapeake Bay and its tributaries, states that it makes its first appearance in the upper part of that bay as early as the first or second week in October. It is said to be one of the very first Ducks to make its appearance in those waters. The taste of its flesh varies greatly, according to the different conditions under which the bird has lived, being at times very fishy, but occasionally having a very fine flavor.

Mr. Lockhart met with this Duck on the Yukon River, where, by a mere accident, he found its nest, concealed in the hollow of a rotten stump of a tree near the bank of that stream, and containing nine eggs. The female was supposed to have been killed, incubation not having begun. This was presumed to have been her second nest, the eggs having been taken from the first. Another nest was met with by Mr. Lockhart in the hollow of a poplar-tree about twenty feet from the ground; it was found near the Black River on the 7th of July. The hole was dug out in the same manner as a Woodpecker's, and was an arm's length in depth, containing ten eggs. A third nest was in the hollow of a dead tree near a lake, and only five feet from the ground. These nests had no other lining than down. The number of eggs was usually nine or ten; in one instance only six.

Audubon met with this species on the 11th of May, 1833, near Eastport, in Maine. During the period of its movement toward the north he found it exceedingly abundant on the waters of the Bay of Fundy. The males in flocks, and in their full summer dress, preceded the females about a fortnight. In the vicinity of New Orleans this species is known as the "Marionette." He met with it, during extremely cold weather, on the Ohio, when the river was thickly covered with floating ice, among which it was seen diving, almost constantly, in search of food. When the river was frozen over, these birds sought the head-waters of rapid streams, and in their turbulent eddies found an abundance of food. Apparently feeling secure in the rapidity with which they can dive, they allow a very near approach; but at the first snap of the gun dive with the quickness of thought, and often as quickly rise again within a few yards of the same spot. Their flight is usually low, and made by regularly repeated beats of the wings; and it is surprisingly rapid — equalling in rapidity that of the Hooded Merganser. Its note is a mere croak, resembling that of the Golden-eye, but feebler. Its food is varied, according to the situation. On the sea-coast and on the estuaries it obtains, by diving, small fry, shrimps, bivalve-shells, and mollusks; in fresh water, small crayfish, leeches, snails, grasses, and other water-plants.

Professor Kumlien informs me that this species is abundant in Southern Wisconsin both in the fall and in the spring, but that none remain there during the summer. Eggs taken in Iowa, and purporting to be of this species, have been widely distributed; but this is a more southern locality, and they are, therefore, not so likely to be authentic as those from farther north; and all that I have seen of these are the eggs of *Q. discors*, bearing but slight resemblance in shade or size to those of *B. albeola*. Mr. B. F. Goss, of Pewaukee, Wis., informs me that the young of this species, still unable to fly, have been killed in Pewaukee Lake — this being the only instance of its being there in the breeding-season which has come to his knowledge.

The Buffle-head was found breeding at Fort Resolution by Mr. Kennicott, May 19; the nest was in a hollow tree. The following year, May 8, 1861, Mr. Kennicott also found it breeding on the Yukon River, in which locality its nests were obtained by Mr. Lockhart, who also procured them on Porcupine River. This species was found breeding at Fort Simpson by Mr. B. R. Ross; at Fort Rae by the younger Mr. Clarke; and at Fort Yukon by Mr. Lockhart.

Dr. Berlandier, in his manuscript notes, speaks of this species as occurring in winter on the borders of the rivers and marshes in the State of Tamaulipas, Mexico. In the spring it retires to the north, and reappears at the beginning of winter.

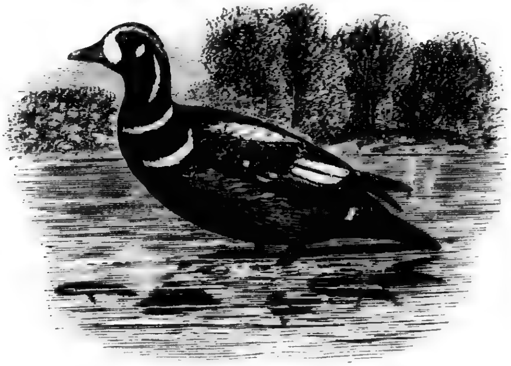
In March, 1855 — as Dr. Kennerly, in his Notes on the Birds observed on the Mexican Boundary Survey, mentions — this Duck was found in abundance at the Boca Grande, in Chihuahua, in flocks; and also at other points on the Conalitos and Janos rivers.

Eggs of this species from the Yukon River (Smithsonian Institution, No. 9550) are of a grayish ivory-white color, with a quite distinct tinge of green. They vary considerably in size; and in some specimens this greenish tinge is much deeper than in others. The smaller-sized eggs of this species, with only very faint tintings of green, approach in appearance the eggs of the Blue-winged Teal; and in collecting, the latter egg has been substituted for the rarer one of the Buffle-head. The following are the measurements of four specimens: 2.00 by 1.45 inches; 2.05 by 1.50; 1.95 by 1.35; 1.95 by 1.45.

GENUS **HISTRIONICUS**, LESSON.

Histrionicus, LESS. Man. II. 1828, 415 (type, *Anas histrionica*, LINN.).
Cosmonessa, KAUP, Entw. Europ. ierw. 1829, 46 (same type).
Cosmonetta, KAUP, t. c., 196.
Phlyacometta, BRANDT, Mem. Ac. St. Petersb. VI. 1849, 4 (same type).
"*Phylaconetta*, BRANDT," BAIRD et COUES.

CHAR. Most like *Clangula*. Bill very small (shorter than the tarsus), the lateral outlines converging rapidly to the tip, which is occupied entirely by the very large nail; depth of the maxilla at the base about equal to its width; lamellæ entirely hidden by the overhanging maxillary tomium; upper basal portion of the maxilla forming a decided angle, inserted between the feathering of the forehead and that of the lores, the former reaching rather farther forward; a slight membraneous lobe at the lower base of the maxilla, overhanging the rictus. Tail rather long (more than half the wing), much graduated, consisting of fourteen feathers. Plumage of the sexes very different, the male very handsomely marked, the female very sombre.



H. minutus.

But a single species of this well-marked genus is known. This, the well-known Harlequin Duck, is common to both continents of the northern hemisphere, where it inhabits chiefly high latitudes.

Histrionicus minutus.

THE HARLEQUIN DUCK.

Anas histrionica, Linn. S. N. ed. 10, I. 1758, 127; ed. 12, I. 1766, 204. — Wils. Am. Orn. VIII. 1814, 139, pl. 72, fig. 4.

Fuligula (Clangula) histrionica, Bonap. Synop. 1828, 394. — Nutt. Man. II. 1834, 448.

Fuligula histrionica, Aud. Orn. Biog. III. 1835, 612; V. 1839, 617; Synop. 1839, 617; B. Am. VI. 1843, 374, pl. 409.

Clangula torquata, Brehm, Vogelf. 1855, 385.

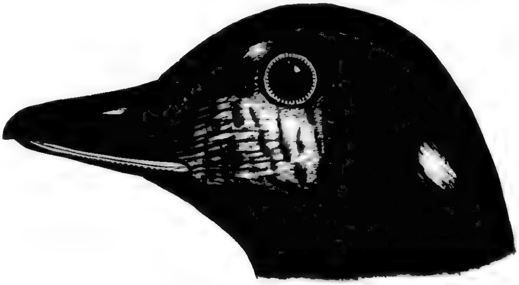
Histrionicus torquatus, Bonap. Compt. Rend. XLIII. 1856. — Baird, B. N. Am. 1858, 798; Cat. N. Am. B. 1859, no. 596. — Coues, Key, 1872, 291; Check List, 1873, no. 510; B. N. W. 1874, 578.

Anas minuta, Linn. S. N. ed. 10, I. 1758, 127; ed. 12, I. 1766, 204 (♀).

Histrionicus minutus, Dresser, Birds of Europe (in text). — Coues, Bull. Nutt. Orn. Club, V. Apr. 1880, 101; Check List, 2d ed. 1882, no. 730. — Ridgw. Nom. N. Am. B. 1881, no. 622.

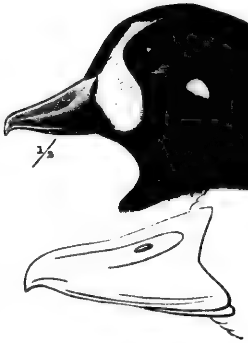
Hab. Northern North America; south in winter to the Middle States and California; breeding south to Newfoundland, the Northern Rocky Mountains, and in the Sierra Nevada to lat. 38° or farther.

Sp. Char. *Adult male:* Entire loral region, continued back, from its upper part, in a stripe on each side of the crown, an oval spot over the ears, a stripe of a little more than an inch in length down each side of the nape, a narrow collar completely encircling the lower neck, a broad bar across each side of the breast, the middle portion (longitudinally) of the outer scapulars, the greater part of the tertials, a spot near the tip of the greater wing-coverts, and a small spot on each side of the crissum, at the base of the tail, white. A broad longitudinal stripe on each side of the crown and occiput, with entire sides and flanks, bright rufous. Head and neck, except as described, dark plumbeous, with a faint violaceous cast, becoming gradually black along the border of the white markings; pileum with a mesial stripe of blue-black extending from the base of the culmen to the occiput. Back, jugulum, and sides of the breast bluish plumbeous, the white collar and the white bar on the sides of the breast bordered on each side by deep blue-black; rump, upper tail-coverts, and crissum deep blue-black; abdomen dark sooty grayish, blending insensibly into the plumbeous of the breast and the black of the crissum, but distinctly defined against the rufous of the sides and flanks; wing-coverts plumbeous-slate; primaries and rectrices dusky black; secondaries ("speculum") metallic dark violet-blue; tertials white, the outer webs edged with black, the inner with dark plumbeous. Bill light yellowish olive, the extreme tip paler; iris reddish brown; feet pale-bluish, the webs dusky, the claws whitish. *Immature male* (*2d year?*)*:* Pattern of the head-markings same as in the preceding, but the plumbeous much duller, the black stripe of the pileum dusky, the rufous on the sides of the crown and occiput wanting, or but faintly indicated. Upper parts in general nearly uniform dusky grayish brown, without well-defined white anywhere, no blue-black, and the speculum dull dusky brownish gray, with little, if any, gloss. Lower parts grayish white, each feather marked with a subterminal transverse spot of grayish brown, the sides, flanks, and crissum nearly uniform grayish brown; no rufous on sides or flanks, and collar round the lower neck imperfect, or only slightly indicated. *Adult female:* Somewhat similar to the male, but the head, neck, and jugulum grayish brown, with a distinct white spot on the auricular region, and the lores and sides of the forehead inclining to white. Jugulum, sides, flanks, and crissum entirely uniform grayish brown. "Bill and feet dull bluish gray; iris brown" (AUDUBON). *Young:* Similar to the adult female, but above browner and more uniform, the jugulum, sides, flanks, and crissum tinged with umber.



Female (*natural size*).

Total length, about 17.50 inches; extent, 27.00; wing, 7.40 to nearly 8.00; culmen, 1.05–1.10; tarsus, 1.50; middle toe, 2.00. Female slightly smaller.



Male.

The Harlequin Duck seems to be nowhere a common species, but to be found chiefly in the more northern or mountainous regions of both continents during the summer, appearing only occasionally here and there on the sea-coasts, and upon open interior waters at very irregular periods, and usually only singly or in pairs. In reference to the geographical range of this species in the Palæarctic Region, Professor Alfred Newton is of the opinion that, with the exception of Iceland and Eastern Asia, it occurs only as an accidental straggler on that continent. It is not known as a bird of Lapland; it has not been ascertained to occur in European Russia, but is simply accidental on the Caspian Sea and on the Sea of Aral. It is also said to be met with about Lake Baikal, and it was found by Middendorff only in the extreme eastern portion of Siberia. It is also a regular visitor to Japan.

Dr. Walker mentions having obtained specimens of this Duck near Godthaab, on the coast of Greenland; and it is also given by Professor Reinhardt as a resident species of that island. Mr. Bernard Ross found it on the Mackenzie River. Captain Blakiston met with it also at York Factory, on Hudson's Bay. It was found at Vancouver by Mr. R. Browne. It occurs occasionally upon Lake Michigan in winter, but it is not frequently observed there.

Sir John Richardson states that this Duck is found, although very rarely, in the Fur Region, where it haunts the eddies below waterfalls and similar localities in rapid streams. It is a very vigilant bird, taking wing at once on being disturbed; and it has never been found associating with any other species of Duck.

Mr. Dall states that the Harlequin Duck was obtained both at Sitka and at Kadiak by Mr. Bischoff, and that it was found to be rather rare in the vicinity of the Yukon River. He speaks of it as an essentially solitary species, found either alone or in pairs, and only in the most retired spots, on the small rivers flowing into the Yukon; localities of this kind being those in which it breeds. It was never found on the main river, except apparently by accident. Mr. Dall afterward met with it at Unalashka, where it appeared to be rather common as a winter visitant, remaining there later than most of the Ducks; and some individuals of this species seemed to reside and breed there. He also speaks of it as not rare at the Shumagins in summer.

Specimens were obtained near Fort Resolution, in May and June, by Mr. Kennicott; at Fort Simpson and the St. Pierre House, by Mr. B. R. Ross; near Fort Halkett, by Mr. Lockhart; at Fort Rae and on the Barren Lands, by Mr. Clarke; at Nulato and on the Lower Yukon, by Mr. Dall; and at Kadiak, by Mr. Bischoff.

According to the observations of Dr. Suckley, the Harlequin Duck was found sparingly on the waters of Puget Sound, not going far inland, but remaining near the Straits of Fuca. As individuals have been taken there in May and September, it is not unlikely that some of this species wander down the coast, during the colder months, as far as California.

This Duck is common, as Mr. Boardman informs me, in the neighborhood of Eastport, Me., during the winter months, but is not supposed to breed anywhere in that vicinity. It was formerly not uncommon in winter on the coast of Massachusetts, and specimens were occasionally seen in the Boston markets from 1835 to 1840. Since then it has been comparatively rare.

On the coast of Long Island, as stated by Mr. Giraud, the Harlequin Duck is very rarely seen. Indeed, he never met with other than immature specimens in that vicinity. He was, however, informed by several of the more experienced of the Bay hunters that, a number of years before, the appearance of adults of this species was not an uncommon event. The flesh of this Duck was said to be very excellent eating.

Professor Newton's conjecture that this Duck would be found to be a native of Japan was verified by Mr. H. Whitely, who obtained a specimen in the Harbor of Hakodadi, December 23.

Mr. C. W. Shepard, in his interesting account of his journey in Iceland, makes mention of his finding the Harlequin Duck breeding in that island. So far as his observations went, this bird seemed to confine itself to the River Laxa, where it was found by him breeding in holes in trees on the banks. He met with it in great numbers in the northwestern portion of Iceland, but found it only on the most rapid streams and rivers.

According to Yarrell, it is a rare and occasional visitor to the British coast. Two specimens were shot, in 1802, on the coast of Scotland; another was afterward taken on the Orkneys — where, however, it is very rare. According to Vieillot, it has been taken on the coasts of France and Germany; Nilsson says it visits Sweden.

Mr. Hewitson figures an egg of this species brought from Iceland by Mr. G. C. Atkinson, of Newcastle, who is said to have found a nest containing seven or eight eggs, deposited in a bed of the bird's down, upon the grass bordering the margin of a shallow lake — a position quite different from that of the nests seen by Mr. Shepard. The egg is described as being of a pale buff tinged with green, and 2.13 inches long, by 1.63 in breadth.

In the "Zoologist" for 1850 Mr. J. J. Briggs publishes an interesting account of the breeding of a pair of this species in confinement in the Melbourne Gardens in Derbyshire. Although they had been kept there for several years, they did not breed until 1849. In these grounds, at a considerable distance from the pool, where the birds had usually lived, and in a retired part, was an ice-house, against which some thatch-sheaves had been placed. Upon these, sheltered from wet and sun, at a height of three feet, the pair formed a nest. This was simply a depression in the thatch, made very soft and warm by being lined with down plucked from the parent bird. The nest contained eight eggs, which were hatched about the middle of June. These eggs are described as being similar in color to those of the European Partridge. When the female left them to feed, she carefully covered them up with down. After feeding, she was always escorted back to her nest by the male bird — who, however, took no share in sitting on the eggs. Several of the young Ducks were reared, but the female died.

I am constrained to believe that Audubon's account of this bird and of its presence on our Atlantic coast is full of error. That it breeds, or has ever bred, on Seal, Grand Menan, or White-head islands, is contrary to all the information I have been able to obtain, after the most careful scrutiny. The gentleman who had Audubon's party in charge assured me that during nearly fifty years' experience he has never seen the "Lord and Lady Ducks," as these are there called, except in winter. He was sure that none were seen when Audubon was there, and that the nests taken at White-head Islands were those of the Red-breasted Merganser. My informant also assured me that he had never met with this Duck on the coast of Labrador, but that he had been told by trappers who had penetrated into the interior that it is found only on the edge of mountain-streams or of elevated ponds and lakes, and even then rarely. Its nest was unknown to him, nor had he ever heard of its having been met with by others.

Several years since, Dr. Hayden captured in the Rocky Mountains a female Harlequin Duck having a fully formed egg in her oviduct — proving that this species probably breeds somewhere within our limits.

In the summer of 1874 Dr. Coues found several pairs of these Ducks, with the young still following the mother, in the Rocky Mountains, near Chief Mountain Lake, in the northwestern corner of Montana, lat. 49°. He saw them on some small pools about the lakes, and also on a brawling mountain-brook — these being just such places as would be inhabited by a Dipper. This was in the latter part of August. One old bird, and several young ones still unable to fly, were secured. Some were killed with stones by the soldiers. The nest itself was not discovered. The birds noticed on the mountain-brook, when alarmed, dived and swam entirely under water, or with only the head exposed, — much like a Grebe. In one instance a bird took refuge in a quiet spot behind a sheet of water that formed a little cascade.

Mr. Edwin Carter informs me that this species breeds in Colorado, though its eggs or nest have not been seen. In the summer of 1876 he met with a pair with young just from the shell.

Mr. Henry W. Elliott mentions finding these Ducks common on and around the shores of the Prybilof Islands, where they were idly floating amid the surf in flocks of fifty or sixty, or basking and preening their feathers on the beaches and outlying rocks. They were to be seen all the year round, excepting only when forced away by the ice-floes. Their nests, however, eluded his search; and although he was quite confident that they bred either on the rocky beaches or on the high ridges inland, the natives themselves were entirely unacquainted with their eggs. Mr. Elliott's experience in relation to this bird differs, it will be observed, from that of most naturalists who have met with it, since these represent it as essentially solitary, and as being generally found either alone or in pairs. Those birds seen by Mr. Elliott were not particularly wild or shy, and numbers were killed by the natives every fall and spring. This species is said to be remarkably silent; he heard from it no cry whatever during the entire year. It seemed to be decidedly gregarious, solitary pairs never straying away from the flock: the females apparently outnumbered the males two to one.

Professor Kumlien informs me that hunters have repeatedly given him descriptions of a Duck corresponding in the peculiarities of its plumage with no other species than this, and said to occur in the lakes of Southern Wisconsin; but he had never met with it himself. He mentions seeing three examples of this species, one of which was secured at Annaanaatook. This was not an uncommon bird in the Godthaab district, on the Greenland coast.

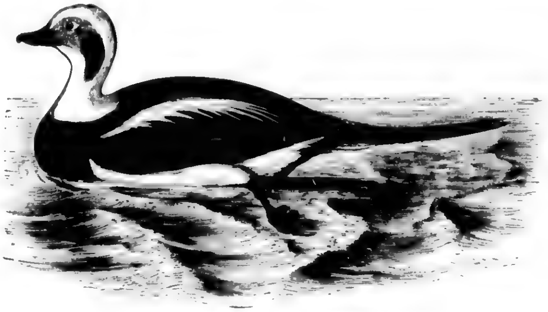
According to Mr. L. Belding, "several pairs of this Duck breed every summer on the Stanislaus River, Calaveras Co., Cal., as low down as four thousand feet altitude, and perhaps lower." At this locality Mr. Belding saw, on June 30, 1881, two flocks, consisting of young birds with their parents, the former at least a month old; July 5, 1881, five flocks, also consisting of young and old, were seen; and July 20, another flock. Mr. Belding further remarks that this is the only species of Duck he has seen in that part of the country in summer, while he also favors us with the following notes: "These birds, young and old, tumble over and through rapids and cascades in an astonishing manner. The crop and gizzard of one I dissected were full of insects, partly, if not principally, the Caddis Fly; and I could not ascertain that it had been eating fish, although shot in a trout-stream. The flesh, while not a luxury, is not offensive to taste or smell. Wilson praises it; but as he also praises the flesh of the Ruddy Duck (*Erismatura rubida*) and that of the Shoveller (*Spatula clypeata*), I am reminded not only that tastes differ, but also that birds may vary in the flavor of their flesh, according to food or other causes; for certain it is that the two last-mentioned Ducks are considered very inferior food on the Pacific coast."

The eggs of this Duck are of a rounded oval form, measure 2.20 inches by 1.70, and are of a dark brownish-gray color.

GENUS **HARELDA**, LEACH.

Harelda, LEACH, Steph. Gen. Zool. XII. 1824, 174 (type, *Anas glacialis*, LINN.).
Pagonetta, KAUP, Ent. Europ. Thierw. 1829, 66 (same type).
Crymonessa, MACG. Man. Brit. Orn. II. 1842, 185 (same type).
Melonetta, SUND. Teut. 1872, 149 (same type).

CHAR. Bill small (much shorter than the tarsus), all its outlines tapering rapidly to the end, which is occupied entirely by the very large broad nail; lower edge of the maxilla nearly straight for the basal half, then suddenly rising to the prominently decurved nail; lamellæ slightly exposed along the straight basal portion of the maxillary tomium; feathering at the base of the bill forming a nearly straight oblique line, advancing farthest forward on the forehead, and scarcely interrupted by any re-entrant angle, so prominent in most Ducks. Adult male with the longer scapulars elongated and lanceolate, the rectrices (14 in number) acute, the middle pair slender and greatly lengthened.



H. hyemalis (winter plumage).

The most important peculiarity of structure in this well-marked genus consists in the almost unique outline of the feathering at the base of the bill, this outline advancing gradually farther forward from the rictus to the base of the culmen, the continuity of the slightly curved line interrupted by only a very faint, sometimes scarcely perceptible, indentation at the place of the deep angle seen in most Ducks. The only other genus showing an approach to this character is *Camptolæmus*, which, however, has the bill and other features very different.

But a single species is known, which, like *Histrionicus*, is circumpolar in its distribution, but descending to lower latitudes in winter.

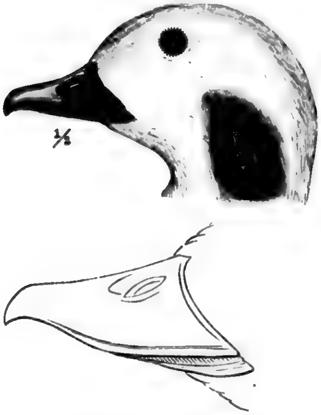
Harelda hyemalis.

THE LONG-TAILED DUCK; OLD SQUAW.

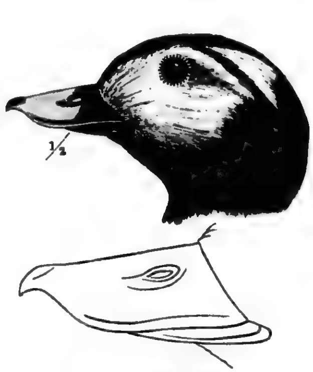
Anas hyemalis, LINN. S. N. ed. 10, I. 1758, 126; ed. 12, I. 1766, 202.
Anas hiemalis, BRÜNN. Orn. Bor. 1764, 17.
Anas glacialis, LINN. S. N. ed. 12, I. 1766, 203. — WILS. Am. Orn. VIII. 1814, 93, 96, pl. 70.
Harelda glacialis, "LEACH," STEPHENS, Shaw's Gen. Zool. XII. ii. 1824, 175, pl. 58. — SW. & RICH. F. B. A. II. 1831, 460. — BAIRD, B. N. Am. 1858, 800; Cat. N. Am. B. 1859, no. 597. — COUES, Key, 1872, 291; Check List, 1873, no. 508; 2d ed. 1882, no. 728; B. N. W. 1874, 579. — RIDGW. Nom. N. Am. B. 1881, no. 623.
Fuligula (Harelda) glacialis, NUTT. Man. II. 1834, 453.
Fuligula glacialis, AUD. Orn. Biog. IV. 1838, 403, pl. 312; Synop. 1839, 295; B. Am. VI. 1843, 379, pl. 410.
Anas miclonia, BODD. Tabl. P. E. 1783, 58.
Anas longicauda, LEACH, Syst. Cat. Mam. and Birds, Brit. Mus. 1816, 37.
Anas brachyrhynchos, BESEKE, Vög. Kurl. 1792, 50.
Platypus Faberi, BREHM, Lerb. Eur. Vög. II. 1824, 1004.
Clangula Faberi, meguaros, musica, brachyrhynchos, BREHM, V. D. 1831, 935, 936, 937, 938.

HAB. Northern hemisphere; in America, south to the Potomac River and the Ohio; chiefly littoral.

Sp. Char. *Adult male, in winter:* Forehead, crown, occiput, nape, chin, throat, lower part of the neck (all round), and upper part of the jugulum and back, white; lores, cheeks, and orbital region light mouse-gray, the eyelids white; a large oblong space covering the sides of the neck, black, becoming light grayish brown in its lower portion. Middle of the back, rump, upper tail-coverts, tail, wings, lower part of the jugulum, whole breast, and upper part of the abdomen, black; the pectoral area very abruptly defined both anteriorly and posteriorly — the latter with a strongly convex outline. Scapulars glaucous-white or very pale pearl-gray; posterior lower parts white, the sides strongly shaded with pearl-gray. Basal half of the bill black, the terminal portion orange-yellow, with the nail bluish gray; iris bright carmine; feet light plumbeous, the webs dusky, and claws black. "The outer half of the bill rich orange-yellow, that color extending to the base along the ridge, the unguis and the basal half black, as well as the unguis and edges of the lower mandible" (Audubon). *Adult male, in summer:* Lores, cheeks, and sides of the forehead, pale mouse-gray; eyelids, and a postocular longitudinal space, white; rest of the head, whole neck, and upper parts generally sooty-black; upper part of the back more or less variegated with fulvous; scapulars widely edged with the same, varying on some feathers to ochraceous and pale buff. Breast and upper part of the abdomen dark sooty-grayish, abruptly defined behind with a semicircular outline, as in the winter plumage; remaining lower parts white, shaded on the sides with pale pearl-gray. Bill black, crossed, in front of the nostrils, by a wide band of orange; iris yellowish brown; feet bluish black, the joints and under surface of the webs black.[1] *Adult female, in winter:* Head, neck, and lower parts, chiefly white; forehead, medially, and crown, dusky; auricular region, chin, and throat, tinged with the same; jugulum light dingy gray. Upper parts dusky brown, the scapulars bordered with grayish fulvous or light raw-umber brown, some of the feathers tipped with pale ashy. *Adult female, in summer:* Head and neck dark grayish brown, with a large space surrounding the eye, and another on the side of the neck, grayish white; upper parts as in the winter plumage, but upper part of the back variegated with light brown, the scapulars chiefly of this color, with the central portion dusky. "Bill and feet dusky green; iris yellow" (Audubon). *Young:* Somewhat similar to the winter female, but much more uniform above, with scarcely any lighter borders to the scapulars, the head and neck light brownish gray, darker on the pileum, and indistinctly whitish before and behind the eye.



Male, winter plumage.



Male, summer plumage.

Downy young:[2] Above, uniform dark hair-brown, relieved only on side of head by a grayish white space on lower eyelid, a similar but smaller spot immediately above the eye, a light brownish gray loral stripe, and a light brownish gray postocular spot; brown on side of head forming a broad stripe from the rictus back to occiput. Lower parts white, interrupted only by a distinct jugular collar of sooty hair-brown. Bill and feet dusky (in dried skins).

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[1] Fresh colors of No. 67837, ♂ ad., St. Michael's, Alaska; L. M. Turner. Audubon describes the fresh colors of bill, etc., in the summer ♂ of this species as follows: "Bill black in its basal half, orange-yellow toward the end, the unguis bluish-gray. Iris bright carmine. Feet light bluish-gray, the webs dusky, claws black."

[2] Described from specimens obtained at Point Barrow, Alaska (Arctic coast), by Messrs. Murdoch

Adult male: Total length, about 23 inches; extent, 30.00; wing, 8.50–9.00; tail, 8.00–8.50; culmen, 1.10; tarsus, 1.35; middle toe, 1.90. *Female*, smaller, the total length considerably less, owing chiefly to the abbreviation of the middle rectrices.

This bird, variously known as the "Long-tailed Duck" of authors, the "Old Wife" and the "Old Squaw" of hunters, the "South-south Southerly" of some localities — the last name being derived from its peculiar jabbering note — is an Arctic species of universal distribution in all the northern portion of the globe. It is Arctic in its summer abode, and in the winter is found on the sea-coasts of America, Europe, and Asia as far south as latitude 35° N.

According to Dr. Bessels, this Duck was seen in the "Polaris" Expedition, under Captain Hall; and Mr. Fielden, in his enumeration of the birds obtained by him in 1875–1876, mentions observing a flock in the pools of water between the floes on the 1st of September, 1875, near Floeberg Beach (lat. 82° 27′ N.). During the summer of 1876 a few of these birds visited the northern shores of Grinnell Land, where they were found in pairs on lakes and ponds, and were evidently breeding.

Dr. Walker met with this species on the coast of Greenland, near Godthaab; and afterward — early in June — noticed it assembling in the pools of water near the shore at Bellot's Strait. Professor Reinhardt also gives it as one of the resident species of Greenland. Mr. Murray met with it at Hudson's Bay, and Captain Blakiston also received it from the same region. Mr. Bernard Ross found it abundant along the whole course of the Mackenzie River.

Professor Newton did not meet with it on Spitzbergen, though this species is known to occur there as a regular visitant — not, however, in great numbers. It is found there as far north as Depot Holm, latitude 80° N., where Dr. Malmgren saw a female bird. He also noticed a pair in Kobbe Bay, May 28, 1861; and, Aug. 1, 1864, he met with a group of five on a small pool of fresh water on one of the islands in Horn Sound. Mr. Gillett found it common in Matthews' Strait, Nova Zembla, but did not meet with it elsewhere. In the same region Von Heuglin found it quite common everywhere. It was especially abundant in shallow places, under the cliffs, on the sea, on fresh-water pools, and at the mouths of rivers. The stomachs of those captured were found to contain chiefly univalve shells — a species of *Natica*.

Mr. C. W. Shepard found this species breeding in great abundance in different parts of Iceland. In one instance he met with quite a number nesting on a small island in the Lake of Mý-vatn. This island was only about sixty yards in circumference, was quite flat, and covered with a long brown grass, and on it he counted more than twenty nests. The Long-tailed Ducks and the Scaup Ducks (*F. marila*) alone

and Smith. A specimen labelled *H. glacialis*, collected by R. MacFarlane on the Arctic coast, July 12, 1864, is quite different, and probably belongs to another species. Its characters are as follows: —

Downy young: (No. 44138, U. S. Nat. Mus., Arctic America, "B. W. C.," July 12, 1864; R. MACFARLANE): Above, hair-brown or grayish umber, relieved by a longitudinal oblong spot of dull grayish white on each side the back (behind the wings), and a much smaller spot of the same on each side of the base of the tail; wings brown, like the back, with a small, inconspicuous, spot of dull light grayish on the bend, and one on the posterior border. Pileum and nape like the back, but darker; remainder of the head and neck, with entire lower parts, dull light grayish, the breast and abdomen nearly white; lores and cheeks strongly tinged with hair-brown; a narrow stripe of darker brown before and behind the eye.

According to Audubon, the "young when newly excluded are covered with stiffish down. Bill and feet greenish dusky; the upper parts chocolate-brown, a small spot of white under the eye; throat and lower parts whitish, as well as an oblong patch on the cheeks."

occupied this island. Nearly all these birds forsook their nests as soon as the boat touched the shore; but a few would not stir until actually driven away. Among the latter were two Ducks — a Scaup and a Long-tail; these were sitting together on the same nest, in which were several eggs of the two species, readily distinguishable from each other by their difference in color, size, and shape. All the nests of the Long-tailed Duck were filled with down, which appeared but little inferior to that of the Eider.

Mr. Dall found this Duck extremely abundant on the sea-coast of Alaska. It was very common in the fall of 1865 at St. Michael's, where it was one of the last Ducks to leave. It was, however, rare on the Yukon River. A single specimen was killed, June 1, 1868, at Nulato, when the river was full of floating ice. Mr. Dall describes this bird as being an expert diver, and hard to shoot, except on the wing. He noticed it breeding abundantly on every beach, in a very simple nest without any lining. He also found it in large numbers resident in the Aleutian Islands, and exhibiting a great variety in the colors of its plumage; the same thing was noticed on the Yukon. Although this Duck is mentioned by Dr. Newberry as being a rare visitor on the coast of California, Dr. Cooper thinks that probably it is never met with there at all. It is, however, quite common on the Columbia River in the winter, and probably goes much farther south. Rarely appearing on fresh water, it frequents the most open bays, and feeds upon shellfish and marine plants.

On Norton Sound, Alaska, according to Mr. Adams ("Ibis," 1878), it makes its first appearance about the 7th of May, but by no means in large numbers, and generally only in pairs. It breeds about the inland marshes, its nest resembling that of other Sea-Ducks; the eggs being nine in number, and of a dark olive-green color. The name of this bird in the Eski dialect is *Ad-le-guk-lú-luk*.

Sir John Richardson speaks of finding this Duck abundant in the Arctic Sea, associating with the *Oidemiæ*, remaining in the north as long as it can find open water, and assembling in very large flocks previous to migrating. During its progress south it halts both on the shores of Hudson's Bay and among the inland lakes, and is one of the last of the birds of passage to quit the Fur Countries. In the latter part of August, when a thin crust of ice forms during the night on the Arctic Sea, the female may often be seen breaking a way with her wings for her young brood. This bird is called by the Canadians the "*Cacca-wee*," and is by far the most noisy of all the Ducks.

Mr. Hearne, writing about a century ago, speaks of the birds of this species as visiting Hudson's Bay in great numbers, and as extending their range from the sea-coast to the remotest West. They were found in vast multitudes near Cumberland House. At their first arrival they are excellent eating; but when they are moulting, though very fat, they are generally so rank that few Europeans can tolerate them.

This species is very abundant during the winter off the coast of Maine, and indeed on all the New England sea-shore, and occurs in great numbers in all the bays and estuaries between Eastport and Long Island. It leaves the northern regions in large flocks, which gradually separate into smaller parties, and in the course of the winter are distributed along the entire Atlantic region. It is a watchful and vigilant bird, very difficult of approach, and quite expert in diving, passing so rapidly under the water that shooting it is almost impossible. It can be best approached by sailing down upon it or by gradually drifting among the flock in a boat unpropelled by oars, the occupants keeping concealed. On the wing it is one of the swiftest of its tribe, and one of those birds most difficult to shoot. As a general thing its flesh is tough and fishy.

It is known in the region of the Chesapeake as the "South-southerly," and it usually arrives in those waters between the middle and the last of October.

Audubon mentions that on the borders of a large fresh-water lake in Labrador, July 28, he met with several young broods of this species, carefully attended by their mothers. The lake was two miles from the sea, and not a male bird was in sight. He found several of the deserted nests, and all still contained the down which the mother had plucked from her breast to protect the eggs in her absence. The nests were under low bushes, among rank weeds, and not more than ten feet from the water. They were formed of coarse grass, with an upper layer of finer weeds, and lined with down. In one of them were two unhatched eggs. These measured 2.13 inches by 1.56. Audubon pursued, and at last caught, several of the young, which kept diving before him like so many water-witches, the mothers keeping aloof, but sounding their notes of alarm and admonition. The old birds did not dive, but seemed constantly to urge their young to do so; and he adds, the little things so profited by the advice of their parents, that had they remained in the water instead of making for the land, it would have been impossible for him, with all his exertions, to capture a single one.

The young remain in the ponds until the end of August, by which time they are able to fly, when they remove to the sea, and soon after leave the coast.

In Europe the Long-tailed Duck is chiefly known as an inhabitant of the more northern countries. To Great Britain it is only a winter visitant, coming in small numbers, except when the weather is unusually severe; and the birds arriving at such times are chiefly immature ones. This Duck appears rather often on the coast of Holland, occasionally visits the lakes of Germany, is rare on the coast of France, and is an irregular or accidental visitor in Italy. In the Orkneys it is known as the "*Calloo*," from a supposed resemblance of this word to the musical cry it utters when on the wing.

Mr. G. C. Atkinson describes a nest of this species, found by him in Iceland, as placed on the margin of a small lake, lined with down, which contained six eggs. Mr. Proctor found several nests in the same locality. They were generally among low bushes, by the edge of the fresh water, constructed of a few stems of grass, and lined with down. The number of eggs varied from six to twelve. These are described as of a pale greenish white, with a tinge of buff color.

The abundance of this species on our great lakes during the winter, especially on Michigan and such others as are free from ice, is a new and interesting point in its history. Mr. Nelson found it an exceedingly abundant winter resident in Michigan, and sparingly dispersed throughout Illinois during that season. A few stragglers come about the last of October; but the great body did not arrive before the 1st of December, departing on the 1st of April, although a few lingered until the last of that month. Professor Kumlien informs me that this Duck is frequently met with in winter as a straggler in the streams and lakes of Southern Wisconsin.

The food of this species varies with its feeding-grounds. In shallow water near the coast it collects mollusca, crustacea, fish, and marine insects. In a few instances the remains of the common mussel and shrimp are found. In the summer its stomach is usually filled with fresh-water insects.

The note of this species is one of its great peculiarities, and is very distinct from that of any other of the Ducks, being really musical when heard from a distance, especially if there are a large number of individuals joining in the refrain. The words *south-south southerly*, to my ear, do not in the least resemble the sounds this bird makes; they cannot be represented, or even imitated. The terms "Old Wives" and "Old Squaws," as applied to these Ducks, are not wholly inappropriate; since their gabble has an effect on the ear not very unlike that produced by the incoherent flow of words coming from many old women talking at once.

Mr. MacFarlane found this Duck breeding in immense numbers in the neighborhood of Fort Anderson, on the Lower Anderson River, on the Barren Grounds, and on the shores of the Arctic Sea. By far the greater proportion of the nests were in the vicinity of fresh water; but several were found on small islands, in Franklin, Liverpool, and Langdon bays, on the Arctic coast. They were all on the ground. In a few instances no down was seen in them, but only hay; and in these cases the eggs were invariably quite fresh. The eggs were generally found covered over with the down; but where this was wanting, with the hay. The eggs varied from five to seven, the latter being the largest number recorded in any one nest. The female was usually reluctant to leave her nest, and only rose when nearly approached. From his own personal observations, Mr. MacFarlane came to the conclusion that the usual quantity of down necessary for a Duck's nest is seldom met with before a full set of eggs has been deposited, and that the process of lining with down, which is plucked off from her body by the female, goes on simultaneously with their laying.

Mr. H. W. Elliott found this a very common resident species on the Prybilof Islands, and breeding in limited numbers on the lakelets of St. Paul's. He speaks of it as being a very noisy bird, particularly in spring, when, with the breaking-up of the ice, it comes into the open reaches of water with its peculiar sonorous and reiterated cry — resembling the syllables *ah-naah-naah-yah* — which rings cheerfully upon the ear after the silence and desolation of an Arctic ice-bound winter.

This Duck is of accidental occurrence in the interior of the United States in its autumnal migrations. On one occasion Professor Kumlien procured a specimen at Lake Koskonong, in Southern Wisconsin; and in December, 1874, Mr. R. Ridgway obtained one on the Wabash River, in Southern Illinois. Its occurrence in such localities is quite uncommon, and undoubtedly originates in some disturbing cause.

The eggs of this species are usually of a pale grayish-green; some are paler, and with less green mingled with the gray. They vary in length from 2.00 to 2.10 inches, and in breadth from 1.40 to 1.45.

GENUS **CAMPTOLÆMUS**, GRAY.

Kamptorhynchus, EYTON, Monog. Anat. 1838, 57 (type, *Anas labradoria*, GMEL.); not of CUVIER.
Camptolaimus, GRAY, List Genera, 1841, 95 (same type).

CHAR. Bill nearly as long as the head, much longer than the tarsus, its depth at the base nearly equal to the width, the edges nearly parallel, and furnished near the end with a membraneous lobe, causing a slight expansion; end of the bill gently convex or nearly truncated, the nail broad and slightly hooked; maxillary tomium gently, but very decidedly, convex basally, the lamellæ entirely concealed; basal portion of the maxilla furnished with a sort of cere, or overlying thin plate, covering nearly the posterior half of the bill, and extending considerably anterior to the nostrils; basal outline of the bill much as in *Harelda*, but the angles on each side the forehead more distinct. Feathers of the cheeks stiffened and bristly. Tail rather short, rounded, of fourteen rather pointed feathers. Tertials straight.

This genus stands quite alone, no other being very closely related. In the form of the bill it is entirely unique, the only resemblance to any other consisting in an approximation to *Harelda* in the basal outline, while the membraneous appendage to the edge of the maxilla, near the end, calls to mind the genus *Malacorhynchus* of Australia (see Vol. I. p. 525). There is, however, a decided approximation to the same character in *Eniconetta*.

Camptolæmus labradorius.

THE PIED DUCK.

Anas labradoria, GMEL. S. N. I. ii. 1788, 537. — WILS. Am. Orn. VIII. 1814, 91, pl. 69.

Fuligula labradora, BONAP. Synop. 1828, 391. — NUTT. Man. II. 1834, 428. — AUD. Orn. Biog. IV. 1838, 271, pl. 332; Synop. 1839, 288; B. Am. VI. 1843, 329, pl. 400.

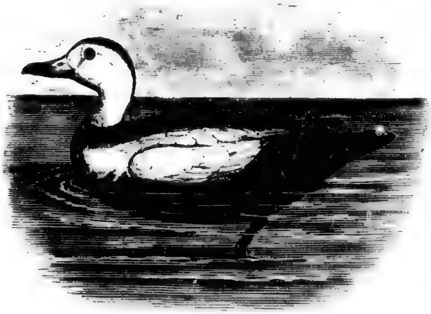
Camptolaimus labradorus, GRAY, List Gen. 1841.

Camptolæmus labradorius, BAIRD, B. N. Am. 1858, 803; Cat. N. Am. B. 1859, no. 600. — COUES, Key, 1872, 291; Check List, 1873, no. 509; 2d ed. 1882, no. 729; B. N. W. 1874, 579. — RIDGW. Nom. N. Am. B. 1881, no. 624.

Fuligula grisea, LEIB, Jour. Phil. Ac. VIII. 1840, 170 (young).

HAB. Formerly, northern Atlantic coast of North America, south in winter to New Jersey and New York; Michigan? Supposed to be now nearly, if not quite, extinct.

SP. CHAR. *Adult male:* Head, neck, jugulum, scapulars, and wings (except primaries) white; longitudinal stripe on the crown and occiput, collar round lower part of neck, back, primaries, rump, upper tail-coverts, tail, and entire lower parts black, the tail and lower surface, except laterally and anteriorly, decidedly more grayish — almost brownish-slate; the ring round the neck composed of soft velvety feathers, and having a dark brownish-purple tinge. Stiff feathers of the cheeks brownish white; tertials edged with black. "Bill with the basal space between the nostrils running into a rounded point in the middle, pale grayish blue; the sides of the base and the edges of both mandibles for two thirds of their length dull pale-orange; the rest of the bill black. Iris reddish hazel; feet light grayish blue, webs and claws dusky" (AUDUBON). *Adult female:* Uniform brownish gray, the wings more plumbeous; tertials silvery gray, edged with blackish; secondaries white; primaries dusky. *Young male:* Similar to the adult female, but chin and throat white, and the white of the jugulum strongly indicated; greater wing-coverts, as well as secondaries, white. Bill as in adult male and female.

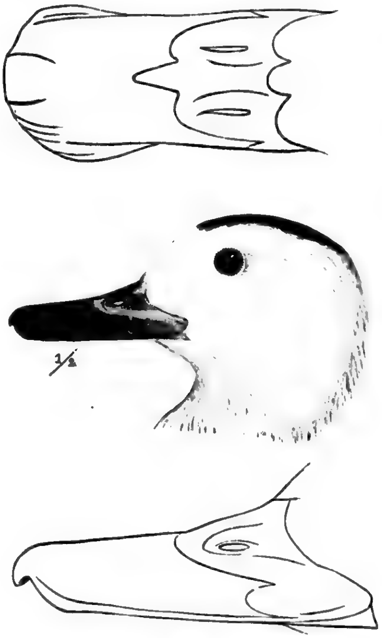


C. labradorius.

Total length, about 18.00 to 20.00 inches; extent, 30.00; wing, 8.50–8.90; culmen, 1.60–1.70; width of bill at base, .82–.90; tarsus, 1.50–1.60; middle toe, 2.25–2.40.

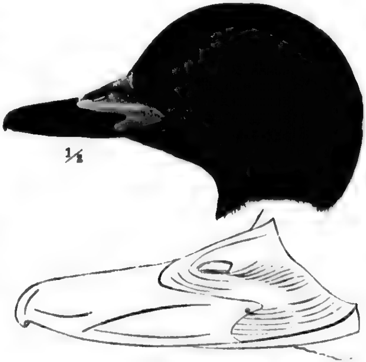
Very little is known as to the history of this Duck. It has always been a somewhat rare species on the Atlantic coast, and within the past ten or twelve years its visits have very nearly ceased. Occasional specimens have been taken about the Island of Grand Menan, near Eastport, Me. The last of which we have any record was obtained by Mr. H. Herrick; it was a female, and had been shot by Mr. Cheney in April, 1871.

Audubon's account of it is apparently in part conjectural, and in part from hearsay testimony, and must be received with caution. He did not meet with any when in Labrador; but his son, John W. Audubon, on a visit to Blanc Sablon, July 28, 1833, found several deserted nests on the top of low tangled fir-bushes, and was told by the English clerk of the fishing establishment there that these belonged to the Pied Duck — the present species. The nests had much the appearance of those of the Eider, were very large, formed externally of fir-twigs, internally of dried grasses, and lined with down. From this Audubon inferred that the Pied Duck breeds earlier than most of its tribe. It is a hardy bird, and at the time Audubon wrote was seen during the most severe cold of winter along the coasts of Nova Scotia, Maine, and Massachusetts. Professor Maccullock, of Pictou, procured several of this species in that neighborhood; and the pair figured by Audubon, and now in the collection of the Smithsonian Institution, were killed by Daniel Webster on Vineyard Island, on the coast of Massachusetts, and by him given to Audubon. The bird which the latter figured as a female is now believed to have been a young male.



Male.

Audubon states that this Duck ranged as far south as the Chesapeake, near the influx of the James River; that he found them in the Baltimore market, and that it was met with every winter along the coasts of Long Island and New Jersey; that it entered the Delaware River, and ascended as far as Philadelphia; and that a bird-stuffer of Camden caught many fine specimens of this species with fish-hooks baited with mussels.



Female.

Mr. P. Turnbull, in his List of the Birds of East Pennsylvania and New Jersey, published in 1869, gives this Duck as being rare, but states that it is seen in small numbers every season.

A writer in the "Naturalist," for August, 1868, states that a single individual of this species had been shot the winter before on Long Island.

Mr. Giraud, in 1843, speaks of this Duck as being then very rare on Long Island, where it was known to hunters as the "Skunk

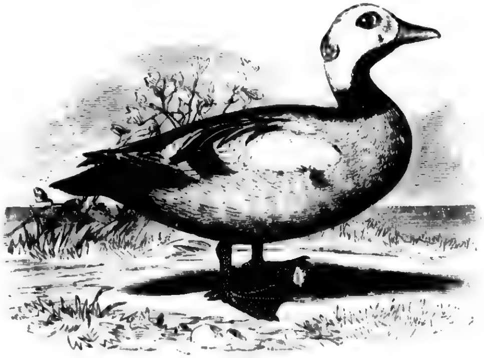
Duck" — so called from the similarity of its markings to those of that animal. On the coast of New Jersey it was known as the "Sand-shoal Duck." It is said to subsist on small shells and other fish, which it procures by diving. Its flesh is not considered a delicacy, although this bird is said to be seen from time to time in the New York markets during every season.

Mr. George A. Boardman, writing to the "Naturalist" (III. 383), states that not many years ago this was a common bird all along our coasts from Delaware to Labrador; and that in the New York market there would at times be dozens of them, and then not one for several years. It would, he adds, be very interesting to know where they have gone. So good a flier and diver cannot, like the clumsy *Alca impennis,* have become extinct. That it has not entirely disappeared Mr. Boardman has himself received evidence, single individuals of this species having been occasionally procured in the Bay of Fundy.

GENUS **ENICONETTA**, GRAY.

Macropus, NUTT. Man. II. 1834, 450 (nec SPIX, 1824).
Polysticta, EYTON, Brit. Birds, 1836 (type, *Anas Stelleri*, GMEL.); antedated by *Polysticte*, SMITH, 1835.
Stellaria, BONAP. Comp. List, 1838, 57 (same type); err. typ. for *Stelleria*, preoccupied in Zoology.
Stelleria, BONAP. Cat. Met. 1842, 74.
Eniconetta, GRAY, Genera B. 1840, 75 (same type).
Heniconetta, AGASS. Ind. Univ. 1846, 178 (nom. emend.).

CHAR. Bill a little longer than the tarsus, and about intermediate in form between that of *Camptolæmus* and that of *Histrionicus*, compressed, and tapering toward the end, with a broad, depressed, and indistinctly defined nail, as in the latter, but with the maxillary tomium very convex basally and sinuated terminally, as in the latter; edges of the maxilla turned *inward* against, and partly enclosing, the mandible; feathers of the head and neck peculiarly soft and velvety, except on the lores and occiput, where stiffened, on the latter elongated, and forming a short transverse, crescent-shaped tuft. Tertials greatly decurved or falcate, but broad to the tip. Tail graduated, of fourteen pointed feathers. Colors of the male beautifully varied.



E. Stelleri.

This genus is quite intermediate between *Camptolæmus* and *Histrionicus* in the form of the bill and in other characters, but is altogether peculiar in many respects. The turning inward of the edges of the maxilla, so as partly to cover the mandible, in the enclosed bill, is not found in any other genus. The falcate tertials and the general style of coloration approximate it to the Eiders — which, however, are very different in the form of the bill, and in other respects.

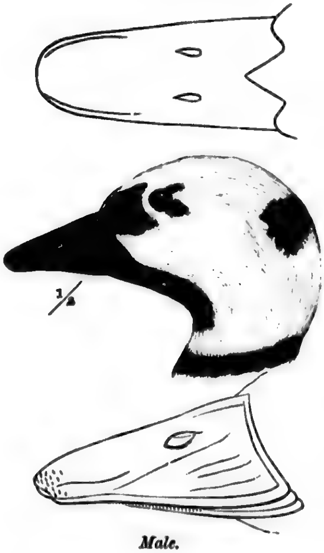
Eniconetta Stelleri.

STELLER'S DUCK.

Anas Stelleri, PALL. Spic. Zool. VI. 1765, 35, pl. 5.
Fuligula (*Macropus*) *Stelleri*, NUTT. Man. II. 1834, 451.
Fuligula (*Polysticta*) *Stelleri*, BRANDT, Mem. Acad. St. Petersb. VI. 1849, 7.
Polysticta Stelleri, EYTON, Cat. Br. Mus. 58; Mon. Anat. 1838, 150. — BAIRD, B. N. Am. 1858, 801; Cat. N. Am. B. 1859, 598.
Somateria Stelleri, JARD. Brit. B. IV. 1839, 73. — COUES, Key, 1872, 291; Check List, 1873, no. 511; 2d ed. 1882, no. 731; B. N. W. 1874, 580.
Anas dispar, SPARRM. Mus. Carls. 1786, pls. 7, 8.
Stellaria dispar, BONAP. Comp. List, 1838, 57.
Anas occidua, BONN. Tabl. Orn. I. 1790, 130. — SHAW, Nat. Misc. pl. 34.

HAB. Arctic and Subarctic coasts of the Northern Hemisphere.

SP. CHAR. *Adult male:* Greater part of the head, and upper portion of the neck, satiny white; lores, and crescentic tuft across occiput, dark dull greenish; space surrounding the eye (widest behind), chin, throat (narrowing greatly below), lower part of the neck (all round), middle of the back (longitudinally), scapulars, tertials, and secondaries glossy blue-black or dark steel-blue; rump, upper tail-coverts, and tail duller blue-black; scapulars marked with a mesial lanceolate stripe of satiny white, widest on the inner webs; tertials with their inner webs wholly satiny white, this invading the inner portion of the outer webs; secondaries tipped with white. All the wing-coverts, anterior scapulars, and sides of the back pure white; primaries dull black. Lower parts dull ferruginous, becoming gradually dusky on the middle of the abdomen, fading into buff on the sides, flanks, and jugulum, the buff changing insensibly to white next to the blue-black of the neck and on the upper border of the flanks; the dusky of the abdomen gradually darkening posteriorly, the whole anal region and crissum being dull black. A small spot of blue-black on the anterior part of the sides, beneath the bend of the wing; lining of the wing entirely white. "Bill dull grayish blue, as are the feet, the claws yellowish gray" (AUDUBON). *Adult female, in summer:* Above, dusky, more or less relieved by pale fulvous or light-brown edgings to the feathers, the anterior portion of the back more spotted, but the rump sometimes uniform blackish, though the feathers are usually narrowly tipped with light brownish; head and neck pale-brown, freckled or transversely speckled with dusky, this forming more distinct bars on the pileum; jugulum and breast light rusty brown, spotted or irregularly barred with dusky; feathers of sides and flanks dusky, bordered with light brown; abdomen, anal region, and crissum nearly plain sooty blackish. Wing-coverts dusky, broadly tipped with brownish gray; speculum dull metallic blue or violet, bounded on each side by a white bar, as in the male; falcate



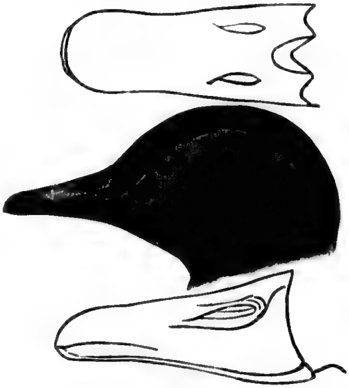
Male.

tertials mostly dusky. *Young male:* Similar to the adult female, but speculum dusky grayish brown, with little, if any, metallic gloss, the tertials but slightly curved, and with little or no white.

Total length, about 18.00 inches ; extent, 27.00 to 30.00 ; wing, 8.00–8.50 ; culmen, 1.40–1.45 ; tarsus, 1.50 ; middle toe, 1.95.

A supposed young male from Northern Europe (No. 57266) corresponds with the description given above, except that the throat is black, the occipital feathers stiffened, while white feathers appear on the sides of the breast.

This species was first described from specimens obtained by Steller in Kamtschatka, where it was said to breed upon rocks inaccessible to man. It appears to be most abundant in the northern portions of Western America and Eastern Asia, and in the intermediate islands. It is of occasional or accidental occurrence in Great Britain, where one was taken at Caistor, Feb. 10, 1830, and another near Scarborough, Aug. 15, 1835. The former of these was figured by Audubon. Three or four were procured in Sweden, and another in Denmark. Temminck states that this Duck visits the eastern parts of Northern Europe, and that it has occasionally wandered into Germany. Professor Blasius records the capture of one on the Island of Heligoland. It is also given by Middendorff as having been found by him in the Barrens of Northern Siberia. Mr. Wheelwright states that it appears to remain during the whole year off Varanger Fiord, near North Cape, where it most probably breeds. It is only accidental in the other parts of Scandinavia. A single specimen was taken on the coast of France, between Calais and Boulogne, in February, 1855.



Female.

Mr. Robert Collett writes to Mr. Dresser that this Duck occurs annually on the Lapland coast, where it is still to be seen during the summer, at the mouths of the rivers, close to the sea, feeding on shellfish. In the "Proceedings of the Zoological Society" for 1861, Professor Newton figures an egg of this species, obtained by Middendorff on the *tundras* of the Taimyr. On the 27th of June nests were found containing from seven to nine newly laid eggs. Professor Newton also states that in June and July, 1855, in East Finmark, he saw several small flocks of this species at various places along the Varanger Fiord. Though he made unceasing inquiries, he could not ascertain that it breeds in any part of Norway, or in the adjoining districts of Russia. In its habits it resembles the Common Eider. It was generally seen swimming near the shore, or sitting, at low water, on the rocks covered by seaweed, or flying near the surface from point to point.

Since Professor Newton published this account, Mr. Schancke found Steller's Duck breeding on the Varanger Fiord, and sent to the British Museum two of its eggs with the down from a nest taken near Vardö. Pastor Sommerfeldt states that this species is found on the Varanger Fiord throughout the year, particularly toward the spring; and he was informed that it breeds to the eastward in Russian Finmark.

Middendorff found it breeding and in abundance on the Taimyr River, although not so common as the King Eider. On the 25th of June its nests, containing fresh eggs, were found placed in the moss on the flat barrens; they were cup-shaped, and well lined with down. The male remains in the neighborhood of the sitting female; and the latter leaves the nest unwillingly, uttering a cry resembling that of the Common Teal, but harsher. The eggs were said to vary from 2.20 to 2.41 inches in length, and from 1.53 to 1.61 in breadth.

Specimens of this Duck were taken by Mr. Bischoff at Kadiak; and Mr. Dall found it abundant at Unalashka, where he speaks of it as one of the most common, as well as one of the most beautiful, of the birds of that region. It is resident there throughout the year, as well as at Shumagins; but in the latter place it is much less frequently seen. Unalashka appears to be the headquarters of this species in the Alaskan Region. It is more or less gregarious in the winter, and is to be found in small flocks, which are sometimes joined by a single individual of *Somateria spectabilis;* but it was not observed associating with any other species. The pairing is said to begin about the first of May, and this Duck is never seen with more than one companion during the breeding-season. It also at that period becomes very shy, and if its nest is visited by any one, this is immediately abandoned — a habit not noticed in any other species of Duck. On the 18th of May, 1872, Mr. Dall found a nest on the flat portion of Amaknak Island, Unalashka; it was built between two tussocks of dry grass, and the depression was carefully lined with the same material. Above the nest the standing grass was pressed together so as entirely to conceal it; and it would have escaped notice had not the bird flown out from under his feet. The nest contained a single egg, of a pale olivaceous cast. There was no down or feathers; but had the nest remained undisturbed, these would probably have been added later in the season. This bird was also observed in the Shumagins in March, and also during the summer months, although not in great numbers.

A few of these Ducks were observed by Mr. H. W. Elliott on St. Paul's, one of the Prybilof Islands, in the spring of 1872. Two were shot at St. George's the same year. It is only a straggler on these islands.

Mr. A. G. Nordvi ("Cabanis's Journal," 1871, p. 208) places on record the evidence of the occurrence of this species, and its breeding, in Northern Europe, citing two instances. In the first he received some eggs obtained in Russian Finmark, on the Arctic coast; among these was one undoubtedly of this species. There was no down with it, and of course the identification was not complete. This nest was taken June 14, 1859. There were more eggs, but these were eaten. The other instance was the obtaining, with their down, of three undoubted eggs of this species in the summer of 1870, near Petschinka, in Northern Russia.[1] These facts confirm the conjectures of Mr. Wheelwright and of Professor Newton, that this Duck passes the summer, and probably breeds, in Northeastern Norway and in Northern Russia in Europe, as well as in Siberia.

Mr. L. Kumlien mentions that a beautiful adult male of this species was shot in Disko Fiord, in August, 1878; he also saw three or four while in his winter harbor, Cumberland.

Mr. Dall, in his paper on the birds found west of Unalashka, states that this species was reported to him by Mr. Thompson as wintering in large numbers at Sannakh Island, in lat. 54° 28′ N., long. 162° 52′ W. As illustrative of the irregularities noticed in the migrations of birds at different seasons, he mentions that in May,

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[1] Mr. Robert Collett has more recently had the opportunity of examining the eggs and down from the same locality, and considers that they belong undoubtedly to this species. (Cf. N. Mag. Naturvid. (1881), XXVI. 376.)

1872, this species was very abundant at Unalashka, but that in the same month of the next year not a single one was seen.

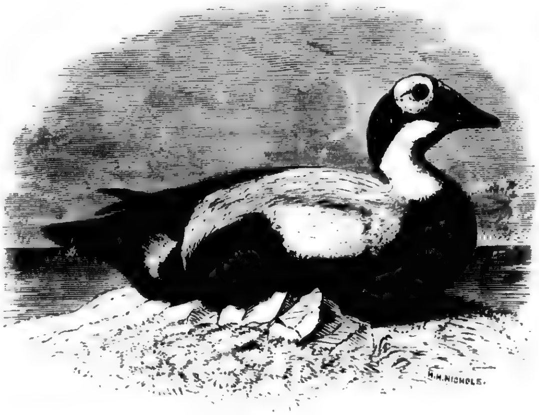
An egg, said to be of this species, obtained in Alaska by Mr. Dall (No. 15571), is, like that of the Eider, of a pale grayish-green color, measuring 2.20 by 1.60 inches. Its identification may, however, be considered as very doubtful.

GENUS **ARCTONETTA**, GRAY.

Lampronetta, BRANDT, Mém. Acad. St. Petersb. 6th Ser. Sc. Nat. VI. 1849 (published 1847 ?), 5 (type, *L. Fischeri*, BRANDT); nec *Lampronessa*, WAGL. 1832.

Arctonetta, GRAY, P. Z. S. 1855, 212 (same type).

CHAR. Bill shorter than the head, the basal portion densely covered with soft velvety feathers on the sides quite to the nostrils, and on the culmen to their anterior end; outline of the feathering extending backward and downward in a straight line from the point on the culmen to the rictus; culmen descending in a straight line to the nail, which is broad and slightly arched; maxillary tomium very straight and regular, the lamellæ very slightly exposed along the middle portion. Feathers of the lores and forehead dense, much stiffened, pointing directly outward; those of the occiput bristle-like, lengthened, and pendulous; orbital region covered by a subcircular or subquadrate mat of very soft, short, dense, and satin-like feathers; below this a longitudinal stripe of short, stiff, bristly feathers directed backward. Tertials falcate. Tail short, graduated, of fourteen feathers.



A. Fischeri.

Arctonetta Fischeri.

FISCHER'S EIDER; SPECTACLED EIDER.

Fuligula (Lampronetta) Fischeri, BRANDT, Mém. Acad. St. Petersb. VI. 1849, 6, 10, 14, pl. 1, figs. 1-4.

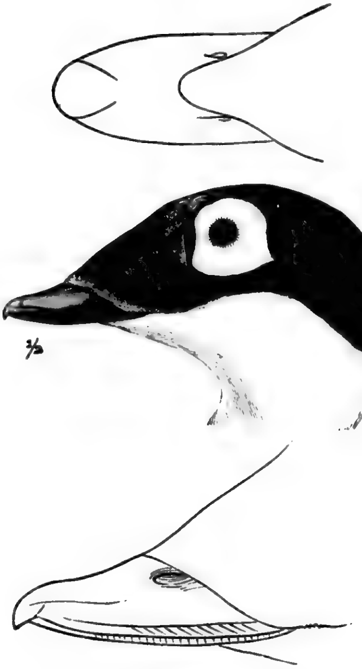
Lampronetta Fischeri, BAIRD, B. N. Am. 1858, 803; Cat. N. Am. B. 1859, no. 599. — ELLIOT, Illustr. B. Am. V. pl. 47. — RIDGW. Nom. N. Am. B. 1881, no. 626.

Arctonetta Fischeri, BLAKIST. Ibis, 1863, 150.

Somateria Fischeri, COUES, Key, 1872, 292; Check List, 1873, no. 512; 2d ed. 1882, no. 732; Birds N. W. 1874, 580.

Hab. Coasts of Alaska, chiefly in the vicinity of Norton Sound, north to Point Barrow.

Sp. Char. *Adult male:* Orbital region silky white, bordered anteriorly and posteriorly by a vertical line of velvety black; lores and forehead white anteriorly, then olive-green, this passing gradually into light greenish buff next to the black bar bounding the orbital region anteriorly; middle of the crown, whole occiput, and upper part of the nape light olive-green; a broad stripe beneath the white orbital space, extending back to the nape, deep silky dull green, abruptly defined except posteriorly; remainder of the head and neck white. Entire lower parts, including the breast and jugulum, rump, upper tail-coverts, tail, remiges, greater and primary wing-coverts, and alulæ plain plumbeous-drab; entire back, scapulars, wing-coverts (except the greater), falcate tertials, and patch on each side the rump plain yellowish white; axillars pure white. Bill light reddish in the skin (orange in life); iris pale bluish; feet brownish. *Adult female, in summer:* Above, light fulvous, barred with black; jugulum, sides, flanks, and upper tail-coverts similar; rump darker; head and neck light grayish buff, finely streaked with dusky, the throat nearly immaculate; abdomen and anal region plain grayish brown; greater wing-coverts, remiges, and rectrices grayish brown, the first, with the secondaries, indistinctly tipped with white.



Male.

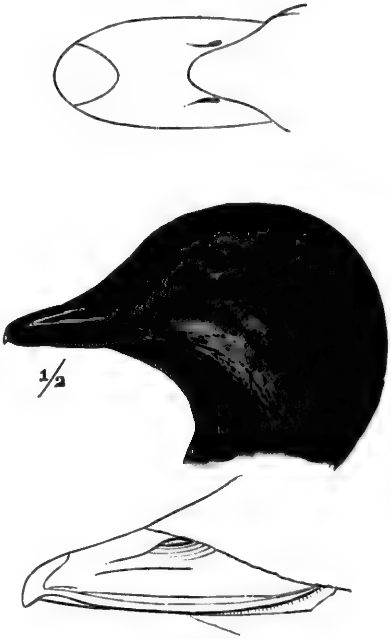
Total length, about 21.50 inches; wing, 10.00; tarsus, 1.70; commissure, 2.20.

The female and young birds of this beautiful species may be distinguished from the other Eiders (of the genus *Somateria*) by the peculiar feathering over the base of the bill (extending to the nostril, as in the adult male), and by the distinctly indicated circumorbital ring.

We are indebted to Mr. Dall for the little we know in reference to the history and distribution of this very rare and, unfortunately, little known species. He met with it in 1867 in and around the Island of St. Michael's, and at a later period in the Aleutian Islands. It was introduced by Mr. Cassin in the ninth volume of the Pacific Railroad Reports, on the supposition that in severe winters it would ultimately be found on our coast; although it at that time was only known from the descriptions and figures of Brandt and Gray, and had only been obtained in Norton's Sound, in Russian America, 63° 30′ north latitude. Mr. Dall informs us that, so far as he then knew, it breeds only in the marshes which lie between the Island of St. Michael's and the mainland, and are intersected by a narrow channel called the Canal. It was not seen near the mouth of the Yukon, nor even a few miles south of the Canal, nor, according to the repeated assertions of the natives, is it found on any point of Norton's Sound to the north of St. Michael's. Its winter habitat was then unknown, but was supposed to be possibly Cook's Inlet or Bristol Bay. It is not abundant, even at St. Michael's. Several specimens which had been reported to have come from other localities have all been definitely traced to that point.

The Russian name for all Eiders is *Pistrik,* and this species is known as the "Small Pistrik."

A nest belonging to a bird of this species was discovered by Mr. Dall in the centre of a small pool in a marsh, built on a tussock just above the surface of the water; it was oval, lined with dry grass, and contained two eggs, which were surrounded and covered with down — evidently from the breast of the parent. The eggs were small as compared in size with the bird, and of an olivaceous brown. There were a number of other Ducks of this species breeding in the vicinity, and also several of the *Somateria V-nigrum;* and some eggs were obtained which, from their resemblance to identified specimens, were probably those of *S. spectabilis,* although the parent was not fully identified. The eye of this species, Mr. Dall adds, is dark brown or hazel, and not blue, as has been asserted. The fall plumage of male and female is nearly identical — a dark brown with black pencillings; only the faintest indications of the spring markings remaining. This bird usually flies in flocks. The last one killed in 1867 was obtained September 27; but some of these Ducks probably remain a short time longer than this.



Female.

Mr. Dall, in a later paper, states that although no birds of this species were actually killed at Unalashka, some were observed on several occasions, and were reported by the natives — who perfectly distinguish between the different kinds of Eiders. Those seen were very shy, and but one or two individuals were observed at a time. This bird is a winter visitant, migrating early in May to its breeding-grounds on Norton Sound.

The late Mr. E. Adams, in his Notes on the Birds observed by him at Michalaski, on Norton Sound, mentions procuring three specimens of this Duck, which he calls the Blue-eyed — in the Eski dialect, *Ong-óo.* They had been shot out of a flock on the 28th of May. He does not seem to have met with this species on any other occasion, and was unable to give any information as to its habits.

Mr. Bannister speaks of it as moderately common near Fort St. Michael's, some fifteen or eighteen individuals having been shot during the spring of 1866. This species and the *Somateria V-nigrum* are said to arrive a little later than most of the other Ducks and some of the Geese, making their appearance about the 6th of May. In their habits the two species are apparently very much alike, and both breed in that vicinity. This species is the more shy of the two, and on that account the more difficult to observe.

In July and August, during the moulting period, this bird is said to be unable to fly. It is reported that on Stewart's Island, just west of St. Michael's Island, numbers have been killed by the Eskimos with sticks and clubs. The skin of this species, prepared in a certain way, is used by these natives for caps, and is by them considered as of some little value. The scalps, also, with their silky bright-green plumage, are sometimes used for adorning the skin dresses worn by the natives.

The flight of this Duck is rapid — more so than that of most other Ducks — being generally low, and very near the surface of the water. In all the specimens seen the iris was of a dark hazel.

Eggs of this species from the Canal of St. Michael's Island are of a pale olive-gray color (Smithsonian Institution, No. 14596). Five specimens measure as follows: 2.50 by 1.85 inches; 2.50 by 1.65; 2.40 by 1.65; 2.35 by 1.55; and 2.40 by 1.70.

GENUS **SOMATERIA**, LEACH.

Somateria, "LEACH," BOIE, Isis, 564 (type, *Anas mollissima*, LINN.).

CHAR. Bill about as long as the head, narrower than deep, the tip formed by the very broad, large nail; feathers of the forehead advancing forward in a long, narrow pointed strip, between two backward extensions of the maxilla, which, intervening between the frontal feathers and those of the cheeks, form a distinct basal angle or lobe; maxillary tomium regular and nearly straight, the lamellæ completely concealed. Head with some portions bristly-feathered (in males); tertials falcate; tail small, short, and pointed, composed of fourteen pointed feathers. Plumage of the males varied and handsome.

S. mollissima.

The four species which compose this genus differ very considerably from one another in form, but they all possess the characters defined above. Like the more or less nearly related genera *Arctonetta*, *Eniconetta*, *Histrionicus*, and *Camptolæmus*, they are birds of high northern latitudes, barely entering the warm-temperate zone in winter.

They may be defined as follows: —

A. Frontal feathers reaching about half way from the base of the maxillary angle to the nostril; feathering of the lores extending forward to beneath the middle of the nostril. Males with white scapulars and tertials, the top of the head chiefly black.

1. **S. mollissima.** *Male*, with the throat entirely white. Basal angle of the maxilla narrow (.25–.35 of an inch wide across widest part), and ending in a point. *Hab.* Palæarctic

Region, Greenland, and west shores of Cumberland Gulf. *Female:* Wing, 10.75–11.60 inches; length of bill, from end of basal angle, 2.45–2.85.

2. **S. Dresseri.** Similar to *S. mollissima*, but basal angle of the maxilla broad (.38–.50 of an inch wide at widest part), and terminating in a broad convex end. *Hab.* Eastern North America, from Maine northward to Labrador; Newfoundland.
3. **S. V-nigrum.** *Male*, with a large V-shaped mark of black on the throat. *Female:* Wing, 11.75–12.50 inches; length of bill, from tip to end of basal angle, 2.50–2.65. *Hab.* Northwestern North America, and portions of Eastern Siberia.

B. Frontal feathers reaching forward as far as the nostrils; feathering of the lores extending only about half way to the nostrils. Male with the scapulars and tertials black, the top of the head light grayish blue.

4. **S. spectabilis.** *Male*, with a large V-shaped mark of black on the throat, as in *S. V-nigrum*. *Female:* Wing, 10.50–11.25 inches; bill, to end of basal angle, 1.20–1.30. *Hab.* Circumpolar regions.

Somateria mollissima.

COMMON EIDER.

Anas mollissima, LINN. S. N. ed. 10, I. 1758, 124; ed. 12, I. 1766, 198.

Somateria mollissima, BOIE, Isis, 1822, 564, et AUCT. (all quotations from Europe). — RIDGW. Proc. U. S. Nat. Mus. Vol. 3, 1880, 204; Nom. N. Am. B. 1881, no. 627. — COUES, Check List, 2d ed. 1882, no. 733.

Anas Cuthberti, PALL. Zoog. Rosso-As. II. 1826, 235.

Somateria St. Cuthberti, EYT. Cat. Br. B. 1836, 58; Mon. Anat. 1838, 149.

"*Anser lanuginosus*, LEACH, Cat. 1816, 37" (GRAY).

Platypus borealis, BREHM, Lehrb. Eur. Vög. 1824, 813 (shores of Baffin's Bay and Davis' Strait).

? *Somateria thulensis*, MALMG. Kongl. Vet. Ak. Ofv. 1864, 380 (Spitzbergen).

Somateria danica, norwegica, platyuros, faeroeensis, megauros, islandica, borealis, Leisleri, planifrons, BREHM, V. D. 890, 891, 892, 893, 894, 895, 896, 897.

HAB. Northern part of the Palæarctic Region; Greenland; breeding abundantly on western shores of Cumberland Gulf (L. Kumlien, Bull. U. S. Nat. Mus. No. 15, 1879, p. 89.).

SP. CHAR. *Adult male:* Pileum deep blue-black, divided medially for the posterior half by a stripe of white or greenish white, and extending anteriorly along the upper edge of the lores almost to the limit of feathering on the latter; upper part of the nape, and posterior part of the auricular region, pale sea-green, this color sometimes extending anteriorly along the lower edge of the black as far as the middle of the lores; remainder of the head and neck, with entire back and scapulars, tertials, all the wing-coverts, sides of the rump, and jugulum, white, tinged, except on head and neck (most deeply on back, scapulars, and jugulum), with yellowish cream-color; breast pinkish cream-color; remaining lower parts, greater wing-coverts, secondaries, middle of the rump (longitudinally), and upper tail-coverts, deep black; primaries and rectrices brownish black. Lining of the wing pure white. Bill dull olivaceous in the skin, orange-yellow with greenish yellow nail in life; iris dark brown; legs and feet dusky grayish in skin, dusky orange in life.[1]

Adult female: Prevailing color brownish buff, everywhere, except on the head, neck, abdomen, remiges, rectrices, and larger wing-coverts, barred with black, the bars broadest on the upper surface; head and neck streaked with blackish, the streaks finer and less distinct toward the throat, which is almost immaculate; larger wing-coverts, remiges, and rectrices plain grayish brown, the first narrowly tipped with white; abdomen and anal region plain, rather dark, grayish brown [No. 76180, Cumberland Gulf, June 6, 1878; L. KUMLIEN]. *Young (full plumage, both sexes):* Above, dusky, the feathers bordered (but not barred) with rusty brown or dull ochraceous, except the greater wing-coverts, remiges, and rectrices, which are plain dusky, the first not tipped with white; head and neck dull grayish fulvous, streaked with dusky, the latter predominating on the pileum; lower parts barred with dull fulvous and dusky, the abdomen sometimes plain dusky.

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[1] Fresh colors, *fide* L. Kumlien, MS.

Downy young: Plain grayish brown, lighter beneath and over the eyes, the abdomen sometimes, but rarely, almost dirty whitish; the light superciliary stripe usually distinct and continuous.

Total length, about 22 inches; wing, 10.50–11.60; culmen, 1.75–2.20; length of bill from tip to end of basal angle, 2.45–3.00; greatest width of angle, .25–.35; tarsus, 1.90–2.20; middle toe, 2.35–2.70.[1]

With the single exception of the Common Mallard, no Duck is more generally known to the world at large than this species. The value of its down, as an article of luxury and of commerce for several centuries, has given it an intrinsic value, and to its history an interest, beyond that belonging to any of its tribe. The importance of this bird has been increased by the pains and success with which its cultivation has been carried on in Iceland, Norway, and in other parts of Europe. In America, where it is equally common, no corresponding attempts have been made to protect it in the breeding-season.

The Eider Duck is an Arctic species, common to the Atlantic shores of Europe and America, but nowhere seen on the Pacific coast of Asia or America. It is found in the Arctic Ocean as far west as the Coppermine River in North America, and as far east as Nova Zembla and the islands north of Siberia.

Messrs. Evans and Sturge found Ducks of this species breeding in immense numbers on the beach of West Spitzbergen. Their nests were mere hollows scooped in the pebbly ground, very scantily lined with down, mixed with seaweed. Subsequently Professor Newton saw it numerous all around Spitzbergen, but less abundant toward the north. Yet on the 15th of July, 1861, flocks of hundreds of male birds were observed at Shoal Point, latitude 80° 10′ N., which seemed to be on their way still farther north.

Mr. Gillette speaks of finding this species tolerably common all along the coast of Nova Zembla; but he nowhere saw it in large flocks. Von Heuglin also met with it in the same locality. He found it everywhere on rocky islands, but not so common as in Spitzbergen. As late as August 8 he met with breeding females, but saw no old males.

Middendorff enumerates the Eider among the birds of Siberia, and includes it in the list of those which penetrate to the extremest northern points.

Mr. C. W. Shepard, in his interesting sketch of his explorations in the northwestern peninsula of Iceland, gives a graphic account of his visit to an island on the northern coast of Iceland, and of the wonderful tameness of the Eider. "The islands of Vigr and Oedey are their headquarters in the northwest of Iceland. In these they live in undisturbed tranquillity. They have become almost domesticated, and are found in vast multitudes, as the young remain and breed in the place of their birth. As the island [Vigr] was approached we could see flocks upon flocks of the sacred birds, and could hear their cooing at a great distance. We landed on a rocky, waveworn shore. It was the most wonderful ornithological sight conceivable. The Ducks and their nests were everywhere. Great brown Ducks sat upon their nests in masses, and at every step started from under our feet. It was with difficulty that we avoided treading on some of the nests. On the coast of the opposite shore was a wall built of large stones, just above the high-water level, about three feet in height, and of considerable thickness. At the bottom, on both sides of it, alternate stones had been left out, so as to form a series of square compartments for the Ducks to nest in. Almost every compartment was occupied, and as we walked along the shore, a long line of Ducks flew out, one after the other. The surface of the water also was perfectly white with drakes, who welcomed their brown wives with loud and clamorous cooing. The house itself was a marvel. The earthen walls that surrounded it and the window embrasures were occupied by Ducks. On the ground the house was fringed with Ducks. On the turf slopes of its roof we could see Ducks, and a Duck sat on the door-scraper. The grassy banks had been cut into square patches, about eighteen inches having been removed, and each hollow had been filled with Ducks. A windmill was infested, and so were all the outhouses, mounds, rocks, and crevices. The Ducks were everywhere. Many were so tame that we could stroke them on their nests; and the good lady told us that there was scarcely a Duck on the island that would not allow her to take its eggs without flight or fear. Our hostess told us that when she first became possessor of the island the produce of down from the Ducks was not more than fifteen pounds in a year; but that under her careful nurture of twenty years, it had risen to nearly a hundred pounds annually. Most of the eggs are taken and pickled for winter consumption, one or two only being left in each nest to hatch."

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[1] Ten examples.

The Eider is indigenous to the northern portions of Great Britain; but is only a winter visitor, and in very limited numbers, to the southern portions, and is rarely met with in Ireland. It is of rare occurrence on the coast of France.

On the Farn Islands, off the northeastern coast of England, the Eider formerly bred regularly. Mr. Selby visited these islands, and has given an interesting account of his observations. In April these birds assembled in groups along the shores of the mainland, and crossed over to the islands early in May. The females began to lay about the 20th, when the males all deserted them, returning to the adjoining coast. The nests were made of fine seaweed; and as incubation proceeded, a lining of down plucked by the bird from her own body was added. This increased from day to day, and became so considerable in quantity as to envelop and entirely conceal the eggs from view. Incubation lasted about a month, and the young as soon as hatched were conducted to the water; and, in many instances, this could only be done by the parent carrying them in her bill. The food of the Eider consists of the different mussels and other kinds of bivalves, with which the rocks are covered. This bird can be reared with difficulty in confinement, and does not walk on the land readily. It dives with great facility, and remains submerged a long while.

The Messrs. Godman found this the most common Duck about Bodo, in Norway, and mention finding several pairs that were breeding on a marsh, near a fresh-water lake, several miles from the sea.

Dr. Walker met with Ducks of this species on the coast of Greenland, near Godthaab; and at Bellot's Strait he saw them beginning to assemble, in the pools of water, early in June. This is also cited by Professor Reinhardt as a resident species of Greenland. Hearne states that it was known, in his day, as the "Dunter Goose" in the Hudson's Bay Region. It was common about the mouth of the Churchill River as soon as the ice broke up; but generally flew farther north to breed, the few that did remain about the settlement there being so scattered among small islands and sea-girt rocks and shoals as to render it not worth while to gather their down. Their eggs were exceedingly good eating; and in the fall of the year their flesh was by no means unpleasant, although this bird is known to feed on fish.

Mr. Kumlien mentions this as the most abundant Duck at Cumberland. The old males, separating from the females and young as soon as the breeding-season is over, assemble in large flocks and migrate southward much earlier than the latter. This Duck can endure any temperature where it can find open water. On one occasion an adult male was seen in the tide rifts in January, with the thermometer at −50°; but he was too lively to be secured. Young unable to fly were seen as late as the middle of October. Their food in autumn consists almost wholly of mollusks. On one occasion Mr. Kumlien disturbed a large colony of them, and the Ducks all left their nests. He sent his Eskimos to another island while he remained behind to see how the birds would behave. As soon as the boat left, both males and females returned to their nests. One male alighted by the side of a nest and settled down on the eggs with a well-satisfied air, when suddenly a female appeared, and seemed to inform him that he had made a mistake, and that it was not his nest; he thereupon withdrew with an awkward bow. The Ducks all seemed very noisy and communicative; but when Mr. Kumlien crept out into full view from his hiding-place, there was a general look of disgust and astonishment among them. Many would not even leave their nests, but hissed and squaked at him, after the manner of Geese. He mentions also seeing large flocks of immature birds, both male and female, that do not breed.

Dr. Bessels includes the Eider among the birds taken by the "Polaris" Expedition, under Captain Hall, in Polaris Bay. Mr. Feilden, in the British Arctic Expedition of 1875–1876, found it breeding in great numbers in the neighborhood of Fort Foulke, but decreasing in numbers as it passed northward. It became rare after passing Cape Frazer, the meeting-place of the Polar and Baffin's Bay tides. He did not meet with one north of Cape Union; but Dr. Coppinger procured both this species and the *spectabilis* at Thank-God Harbor (lat. 81° 38′ N.) in the month of July, 1876.

Sir John Richardson regarded this as an exclusively marine species, and was not aware that it is ever seen in fresh water. Its food is said to consist almost wholly of the soft mollusca so common in northern waters. It is only partially migratory, the older birds rarely moving farther south in winter than to permanent open water.

Somateria Dresseri.

THE AMERICAN EIDER.

Anas mollissima, Wils. Am. Orn. VIII. 1814, 122, pl. 71.
Fuligula (*Somateria*) *mollissima*, Nutt. Man. II. 1834, 407.
Fuligula mollissima, Aud. Orn. Biog. III. 1835, 344; V. 1839, 611, pl. 246; Synop. 1839, 291; B. Am. VI. 1843, 349, pl. 405.
Somateria mollissima, Bonap. Comp. List, 1838, 57 (part). — Baird, B. N. Am. 1858, 809; Cat. N. Am. B. 1859, no. 606. — Coues, Key, 1872, 293; Check List, 1873, no. 513.
Somateria Dresseri, Sharpe, Ann. Mag. N. H. July, 1871, 51, figs. 1, 2.
Somateria mollissima, var. (?) *Dresseri*, Coues, Birds N. W. 1874, 580.
Somateria mollissima Dresseri, Ridgw. Pr. U. S. Nat. Mus. vol. 3, 1880, 205, 222; Nom. N. Am. B. 1881, no. 627 *a*. —Coues, Check List, 2d ed. 1882, no. 734.

Hab. American coasts of the North Atlantic, from Maine, etc., to Labrador.

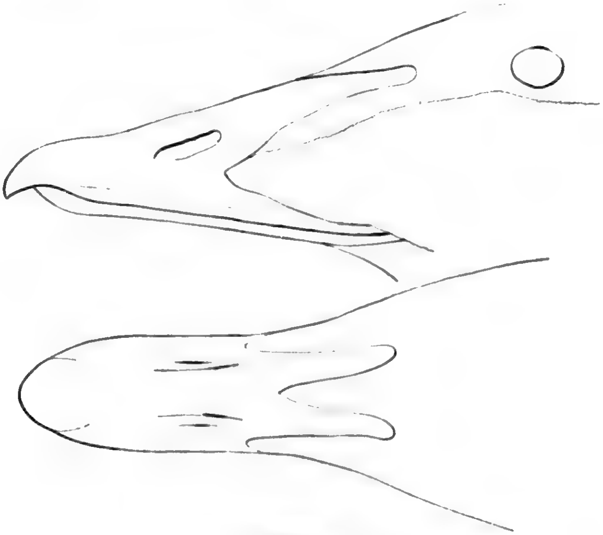
Sp. Char. *Adult male:* Similar to *S. mollissima*, but the "cere" very much broader (.38 to .50 of an inch wide anteriorly), much corrugated, the posterior extremity broad and rounded; green of the head rather more extended, usually following along underneath the black almost or quite to the bill. "Bill pale grayish yellow, the unguis lighter, the soft tumid part pale flesh-color; iris brown; feet dingy light green, the webs dusky" (Audubon). *Adult female:* Scarcely distinguishable from that of *mollissima*, but basal angles of the maxilla deeper and broader. "Bill pale grayish green; iris and feet as in the male" (Audubon). *Downy young:* Not distinguishable from that of *mollissima*.

Total length, about 24.00 to 26.00 inches; extent, 39.00 to 42.00; wing, 11.15–11.50; culmen, 1.95–2.40; from tip of bill to end of basal angle, 2.75–3.35; greatest width of angle, .38–.50; tarsus, 2.00–2.20; middle toe, 2.50–2.70 (six examples).

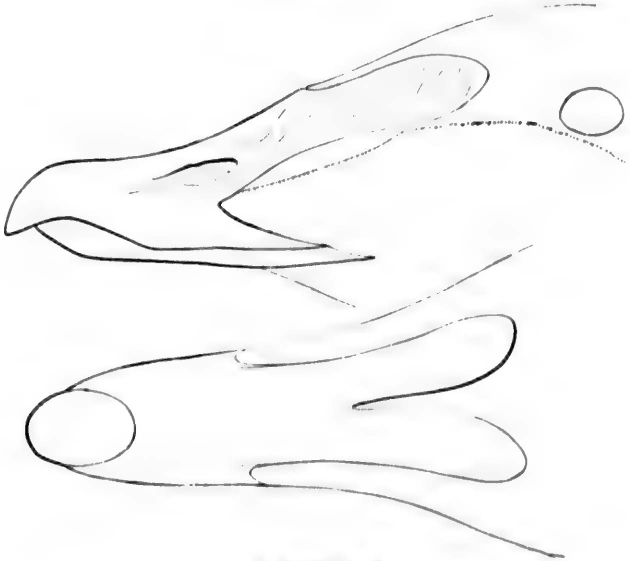
After a close direct comparison of six males of *S. mollissima* with five of *S. Dresseri*, we have been unable to verify the points of distinction given by Messrs. Sharpe & Dresser ("Birds of

Europe," Pt. IV., p. 14), other than those defined above. We find the falcate tertials equally developed in specimens of both forms, while the extent of the green of the head is quite variable, according to the individual.

The accompanying outline figures will serve to show the great difference in the form of the bill, especially its basal portion, in the two species.

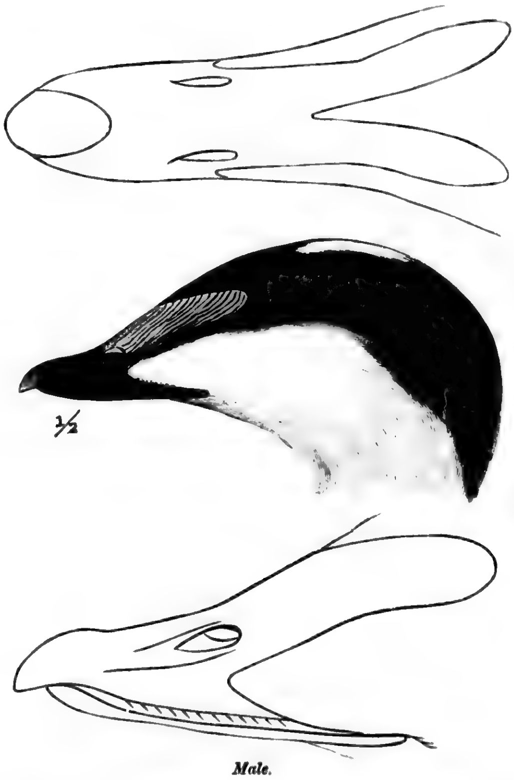


S. mollissima, ♂ *ad.*



S. Dresseri, ♂ *ad.*

The Eider breeds on the extreme eastern coast of Maine and in the Bay of Fundy, and would, no doubt, do so in considerable numbers were it not so constantly robbed of its eggs and down. It is found in the winter along the whole Atlantic coast as far south as the Delaware. Ducks of this species are brought to the Boston market every winter, but in much smaller numbers than formerly; and they are rarely now met with except in midwinter. Audubon mentions that they were present in Boston Harbor in considerable numbers in 1832, as early as October.



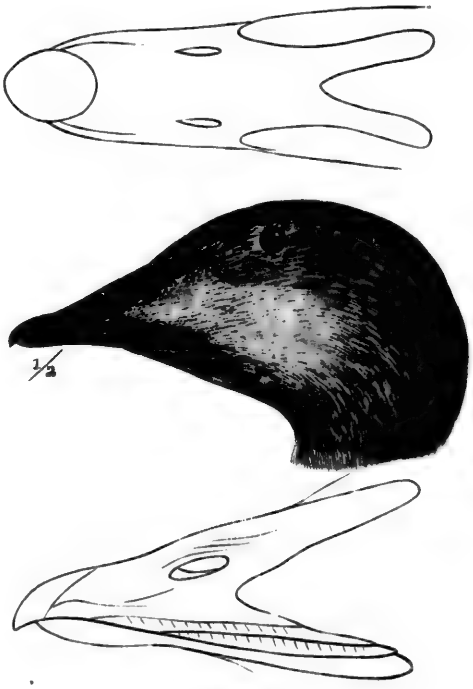
Male.

According to Audubon, this Duck breeds along the Atlantic coast from the Bay of Fundy to the extreme northern points of Labrador, and thence on all the more northern headlands. He found the number of eggs to vary from five to ten; in the latter case they are supposed to be the product of two females. If the nest is robbed in the early part of the season, the female seeks her mate once more, and lays another and smaller set; but if the eggs are taken late in the season, the nest is forsaken. Early in August Audubon found the Eider in Labrador moving southward,—probably, however, to more sheltered havens, and not farther to the south than the St. Lawrence.

This species nests in Labrador early in May. The nest is sunk as much as possible into the ground, and is formed of seaweed, mosses, and a few dry twigs, so matted and interlaced as often to present quite a neat appearance. The cavity is about seven inches in diameter. The young are led, or carried, to the water by the mother, and for several weeks nothing can exceed the care she takes of her brood—defending them against the attacks of Gulls, and prompting them to dive when necessary.

Occasionally two females occupy the same nest, and share with each other the care of the young flock. The young are at first of a dark mouse-color, and covered with a soft down. Their feet are very large, and they are remarkably expert in swimming and diving. They grow with great rapidity.

The Eider can easily be domesticated, especially when raised from the egg, becoming accustomed to feed on corn and meal, and is as tame and contented in confinement as the Mallard. It is necessary, however, that the bird be provided with an abundant supply of gravel and of varied food. The cry of the female when startled from her nest is described as being a hoarse rolling croak. The food of this species consists largely of shellfish, the shells of which are broken in pieces by the muscular gizzards of the birds, aided by coarse gravel.



Female.

Dr. Henry Bryant, who visited Labrador in the summer of 1860, gives an interesting account of his observations on the breeding of the Eider on that coast. We copy substantially his narrative. He found it still breeding in great abundance along the whole extent of the shore, some nests being placed under the shelter of the dwarf-firs and junipers, although the favorite breeding-places were the little grassy islands found in bays, and particularly those where small spots of turf were protected by a rock from the prevailing wind. On many islands an umbelliferous plant grows abundantly, the shelter of whose thick foliage these birds seemed to prefer. It was not often that many nests were found on one island — from one to a dozen being the ordinary number; but on Greenlet Island he found over sixty; and this was probably not a quarter of the whole number. This island was peculiarly well adapted to the wants of this Duck, being covered with a thick growth of this umbelliferous plant, but slightly elevated above the water, and at a distance from the mainland. He found on this island a nest in a small stone hut made for the purpose of concealing the hunters in the spring. Many nests were seen in which the down was quite clean, and he believed that it is always so if the bird is undisturbed; but after the nest has been frequently robbed, the supply of this material is not sufficient, and whatever substitute is most convenient has to be taken in its place: so that, late in the season, nests are found without any down. Some contained fresh eggs, and others were only just finished, as late as the middle of July. Audubon states that the eggs are deposited on the grass, etc., of which the nest is principally composed; Dr. Bryant, however, did not see a single instance in which this had been done, provided there was any down; and nearly every day, during the first week or two, he found nests containing freshly laid eggs lying on a bed of down so exquisitely soft and warm that, in that almost painfully barren and frigid region, the nest seemed to be the ideal of comfort, and almost of beauty. When the bird leaves her nest without being suddenly disturbed, the eggs are generally covered with down, and always so when the full complement has been laid. The largest number found in a nest was six; and this happened in so many instances that Dr. Bryant regarded six as the normal number. In color the eggs present two varieties — one of a pale greenish-olive or oil-green color, and the other brownish or true olive. The first-mentioned variety is frequently marked with large spots, or splashes, of the same color, of much greater intensity; the other kind is invariably without spots. After the eggs have been incubated for some time they become more or less scratched by the claws of the parent while sitting on them or rolling them over. In shape the eggs present but little variety, being always nearly oval. In size the difference is less than is the case in the majority of birds. The largest egg measured 3.27 by 2.16 inches; the most elongated, 2.95 by 1.85; and the most broadly oval, 2.79 by 2.08.

Somateria V-nigrum.

THE PACIFIC EIDER.

Somateria V-nigra, GRAY, P. Z. S. 1855, 212, pl. 107. — BAIRD, B. N. Am. 1858, 810; Cat. N. Am. B. 1859, no. 607. — ELLIOT, Illustr. Am. B. pl. 48. — COUES, Key, 1872, 293; Check List, 1873, no. 514; 2d ed. 1882, no. 735; B. N. W. 1874, 581. — RIDGW. Nom. N. Am. B. 1881, no. 628.

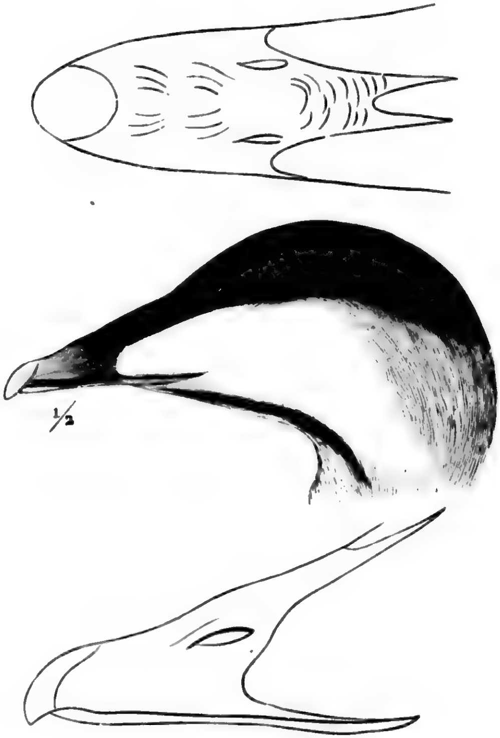
HAB. American coasts of the North Pacific; Yukon Valley, Mackenzie River, and Slave Lake districts; Eastern Siberia.

SP. CHAR. Similar to *S. mollissima*, but decidedly larger, the bill broader, and deeper through the base, the angles of the maxilla proportionally shorter and much more acute; *male* with a large V-shaped black mark on the throat, as in *S. spectabilis*. *Adult male:* Top of the head velvety black, with a slight violet gloss, divided mesially, from the middle of the crown back, by a narrow stripe of greenish white; the black extending forward in a rather wide stripe along the upper edge of the lores, underneath the basal angle of the maxilla, but not extending anteriorly as far as the nostril; greater wing-coverts, secondaries, middle line of the rump, upper tail-coverts,

S. V-nigrum.

and entire lower parts from the breast back, deep black; primary coverts, primaries, and tail blackish dusky; rest of the plumage, including the falcate tertials, continuous white, the breast tinged with creamy buff (much less deeply than in *S. mollissima*), the upper half of the nape, the auricular region, and the upper border of the cheeks deeply stained with yellowish green; throat with a large V-shaped mark of velvety black. Bill orange red, paler terminally (light reddish in the dried skin), the nail yellowish white; iris dark brown; feet yellow. *Adult female:* Light fulvous, barred with black, the bars widest on the scapulars; head and neck finely streaked with black, the throat nearly immaculate; abdomen usually plain grayish brown; greater wing-coverts, primary coverts, remiges, and rectrices plain grayish dusky, the greater coverts and secondaries distinctly tipped with white. *Young:* Similar to the adult female, but upper parts dusky, the feathers bordered with rusty fulvous, the greater coverts and secondaries not tipped with white.

Wing, 11.75–12.75 inches; culmen, 1.80–2.20; from tip of bill to end of basal angle, 2.50–3.10; greatest width of angle, .20–.30; tarsus, 2.00–2.30; middle toe, 2.50–2.85.[1]



Male.

This species — essentially an Eider in all respects, not only in habits, appearance, but in all the peculiar characteristics of this well-marked form — replaces the *mollissima* on the northwestern coast of America, and on the Arctic Ocean, at least as far to the east as the mouth of the Coppermine River. Mr. Bernard Ross records it as occurring at Great Slave Lake, lat. 61° north, and long. 114° west; but it was rare in that locality, only two specimens having been obtained.

Mr. Dall mentions finding this Duck common in the Island of St. Michael's in the month of July, at which time his observations began. It was known to the Russians as the Large Pistrik. So far as he was able to observe, it appeared to have a very limited range — as much so as that of *Arctonetta Fischeri*. Individuals were much more numerous, and large flocks of males were frequently seen near the Fort. By September all had assumed a uniform brown color, with dark pencillings. The eye is said to be hazel. They all left in a body about the first of October.

Mr. Bannister also speaks of this Duck as breeding in abundance in and around St. Michael's. In the early spring, when it first made its appearance, the sexes seemed to be present in about equal numbers, and were generally found together. In June, however, he noticed numerous small flocks composed entirely of males; and still later in the season — in the latter part of July, and in August — the flocks were apparently all females, though perhaps partly composed of males in their autumnal plumage. Throughout the month of July, however, solitary males could often be started on the small outlying rocky islands, apparently in full spring colors, though generally unable to fly. They escaped by rapid swimming and diving, and they could only be shot or followed in a *kyak* when circumstances were very favorable. Mr. Bannister's observations of this species led him to believe that these birds dislike swimming in rough water. On windy days he has generally seen them in small flocks squatting along the upper edge of the beach or swimming in the more sheltered coves and inlets. The noise made by these Ducks in spring is said to be very peculiar; and when many are heard together — as is generally the case — it can only be described as a continuous grunting.

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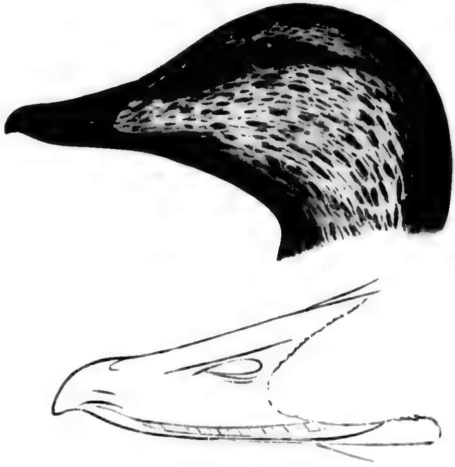
[1] Nine examples measured.



Female.

Mr. MacFarlane found this species breeding in great numbers on the Arctic coast, near the mouth of Anderson River. The nests were seen in various situations — some on a rising band near the sea-shore, others on sloping ground three hundred feet or more from the water. Some were on the coast, and others on islands in the bays. All the nests were on the ground, and, for the most part, mere depressions in the soil, but plentifully lined with down. Those found after the middle of June contained more or less developed embryos. By the last of June the males appeared to have left their mates, as Mr. MacFarlane noticed that the two sexes kept apart, although they were occasionally seen in pairs. In some cases Mr. MacFarlane found what he believed to be eggs of the *spectabilis* in the same nest with those of the *V-nigrum*, for which fact he could only account on the supposition that the former had dispossessed the latter, who were the original and rightful owners. He also noticed that the number of females seemed to be always in excess of that of the males; and it may be that this Eider is also to some extent polygamous — as is also the *mollissima*, two females sometimes using the same nest.

The largest number of eggs recorded by Mr. MacFarlane as having been found in any one nest is apparently six — and this in only one instance; the general number was five. Mr. Dall, in his second paper, states that this Duck is apparently a resident in the Aleutian Islands. Wintering abundantly at Unalashka, it seeks its breeding-grounds in the islands to the westward; and it is certain that the large flocks which winter in Captain's Bay do not breed in the immediate vicinity, while this is the most common Duck among the western islands throughout the summer.

The Pacific Eider was found in large numbers on the coast of Norton Sound by Mr. E. Adams ("Ibis," 1878, p. 434). Its Eskimo name is *Mit-kok*. The first noticed near the redoubt of St. Michael's was on the 10th of May; and soon after these birds became quite numerous. They frequented all the marshes, but were generally flying about; they seldom alighted on a lake, but came straight in from the sea, following the course of the rivers; and after taking a few turns about the marshes, they again went out to sea. They soon fixed upon their breeding-places, and their nests were scattered over the whole of the marshes. One nest was within thirty yards of the fort, in the midst of children and dogs — the parent bird having built her nest and laid four eggs before she was discovered. Yet these Ducks are very wary, and difficult to approach. On the wing they fly in a straight line, appearing stupid, and often approaching within a few yards of the hunter. They are very swift on the wing, and can carry off a great quantity of shot. One pair built their nest in a swampy hollow between two small lakes, and about twenty yards from one of them; this nest was placed in the midst of tall grass, and built of rushes and grass, and well lined with feathers and down. By the latter end of May this pair had laid six eggs; and the female then began to sit. The male assisted in building the nest, but not in the process of incubation. While building they worked only very early in the morning. When the female began to lay, both of them came in from seaward a little before noon, and after a few turns round, as if to see that all was right, both alighted in the lake. There they remained some little time, and then the female walked off to her nest; and very soon after her mate went out to sea. In about an hour he came back to the lake, and his mate then joined him; but she was never known to leave her nest until she heard him cooing on the lake. They remained there a short time, playing about and cooing, and then again went out to sea, and did not return until the next day. When the female began to sit, her mate came in every day and took her out to sea, and again accompanied her to the lake; but was never seen to approach the nest. The eggs had not been hatched at the time Mr. Adams left the place.

The principal food of this Eider is mussels and other small shellfish, for which it dives in from three to six fathoms of water. On one day Mr. Adams counted from the fort two hundred and six of these birds feeding along the edge of the water in the Bay; and of the whole number only four were females. Their note very much resembles the cooing of the European Wood Pigeon.

This Duck is said seldom to weigh less than four pounds, and sometimes as much as six. The eggs are generally six or seven in number, of a pale sea-green color, with a tinge of olive. Eggs in the Smithsonian Collection, from Anderson River (No. 9571), are of a uniform light grayish-green color, with an olive shade, and measure from 2.95 to 3.20 inches in length, and from 1.95 to 2.10 in breadth.

Somateria spectabilis.

THE KING EIDER.

Anas spectabilis, LINN. S. N. ed. 10, I. 1758, 123; ed. 12, I. 1766, 195.

Somateria spectabilis, BOIE, Isis, 1822, 564. — SW. & RICH. F. B. A. II. 1831, 447. — BAIRD, B. N. Am. 1858, 810; Cat. N. Am. B. 1859, no. 608. — COUES, Key, 1872, 293; Check List, 1873, no. 515; 2d ed. 1882, no. 736; B. N. W. 1874, 581. — RIDGW. Nom. N. Am. B. 1881, no. 629.

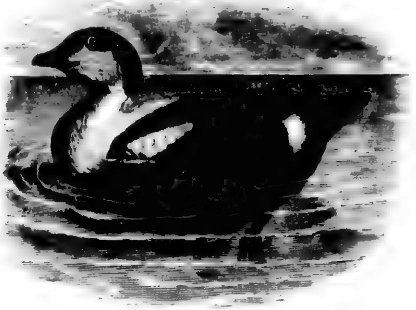
Fuligula (Somateria) spectabilis, BONAP. Synop. 1828, 389. — NUTT. Man. II. 1834, 414.

Fuligula spectabilis, AUD. Orn. Biog. III. 1835, 523, pl. 276; Synop. 1839, 291; B. Am. VI. 1843, 347, pl. 404.

Anas Beringii, GM. S. N. I. 1788, 508.

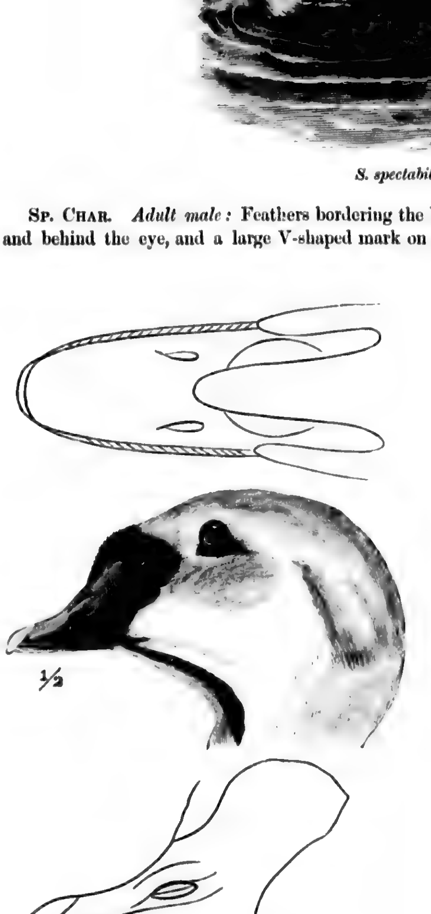
Anas superba, LEACH, Syst. Cat. 1816.

Hab. Northern part of the northern hemisphere; in America, south, casually, in winter, to New Jersey and the Great Lakes.



S. spectabilis.

Sp. Char. *Adult male:* Feathers bordering the base of the maxilla all round, a spot beneath and behind the eye, and a large V-shaped mark on the throat, black; entire top of the head and upper part of the nape delicate pearl-gray, or glaucous-blue, growing gradually deeper behind, where sometimes bordered by an indistinct blackish line; upper and anterior portion of the cheeks, below the eye and immediately behind the black bordering the side of the bill, and an oblique patch on the auricular region delicate sea-green, the auricular patch abruptly defined anteriorly, but above gradually fading into white, along the edge of the bluish-gray of the occiput and nape; remainder of the head, neck, middle of the back, wing-coverts (except greater coverts and exterior border of lesser coverts), lining of the wing, and a patch on each side of the rump white; breast and jugulum deep creamy buff. Remainder of the plumage dull black, the falcate tertials with a narrow and rather indistinct central stripe of dull brownish. "Bill flesh-colored, the sides of the upper mandible and soft frontal lobes bright orange; iris bright yellow; feet dull orange, the webs dusky, the claws brownish black" (Audubon). *Adult female, in summer:* Pale fulvous, varied with black, the latter occupying the central portion of the feathers on the dorsal region, forming streaks on the head and neck, and bars on the jugulum, sides, flanks, and upper tail-coverts; abdomen and anal region nearly plain grayish

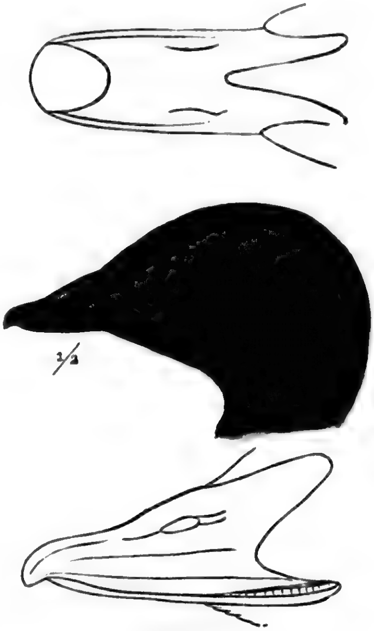


Male.

brown; wing-coverts, remiges, and rectrices plain grayish dusky, the primaries darker; greater coverts and secondaries scarcely, if at all, tipped with white; rump nearly plain dusky. *Adult female, in autumn:* Rich cinnamon-rufous, varied with black much as in the summer plumage; abdomen and anal region plain brown; greater coverts and secondaries distinctly tipped with white. *Young male:* Head and neck plain umber-brown; upper parts dusky, the feathers bordered with fulvous, especially the scapulars; rump, greater wing-coverts, remiges, and tail plain dusky; upper tail-coverts and lower parts barred with pale fulvous and dusky, the abdomen nearly plain grayish-brown. "Bill pale greenish gray; iris dull yellow; feet dull ochre" (AUDUBON). *Young female:* Similar to the young male, but head and neck grayish-buff, finely streaked with dusky.

Total length, about 20.00–25.00 inches; wing, 10.50–11.25; bill, from base of frontal lobe to tip, in the male, 1.20–1.30; tarsus, 1.80–1.86; middle toe, 2.20.

The female of this species may be easily distinguished from that of the Common and Pacific Eiders (*S. mollissima* and *S. V-nigrum*) by the very different outline of the feathering at the base of the bill, as explained in the diagnostic table on page 73.



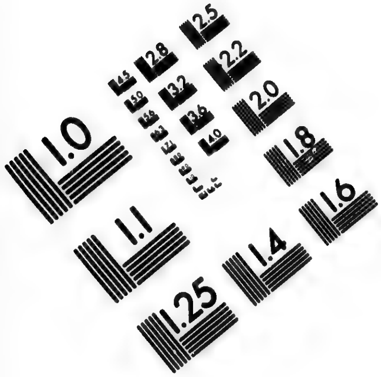
Female.

The King Eider is an Arctic bird very closely resembling in its general habits the two other species of the genus *Somateria*, but nowhere so abundant as they are, although more generally distributed, since it is found on the Pacific shores of America and Asia, where the Common Eider does not occur, as well as on the Atlantic coasts of Europe and America.

Dr. Bessels mentions the King Duck as one of the species secured in the northern waters of Smith's Sound by the "Polaris" Expedition, under Captain Hall; and Mr. W. H. Feilden, in his notes on the birds procured in the Arctic Expedition of 1875–1876, states that in the end of June, 1876, several flocks of males and females, numbering from ten to twenty individuals, were seen near Floeberg Beach, lat. 82° 27′. Most of them fell a prey to the hunters, but those that escaped settled down to breed along the coast; and several nests were found with fresh eggs between the 9th and the middle of July.

Mr. Kumlien mentions the arrival of Ducks of this species at Cumberland by the 20th of June; but they were much less abundant than *S. mollissima.* They keep apart from all other kinds during the breeding-season. He was told by the Eskimos that in some seasons they are much more abundant than in others, and that they came later and left earlier than the Eider. A large proportion of those seen were evidently immature or barren birds, and were not breeding. These Ducks were very common about Disco — breeding, however, farther north.

Professor Reinhardt gives this Duck as a resident species in Greenland. Dr. Walker met with it on the coast near the settlement of Godthaab. In the following June he noted its arrival early in that month at its supposed breeding-grounds,



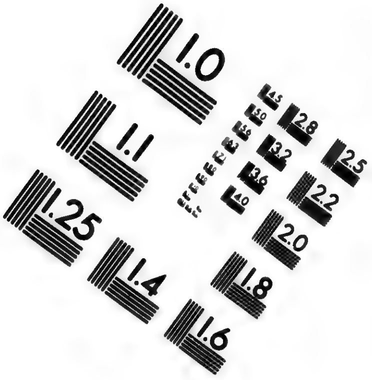
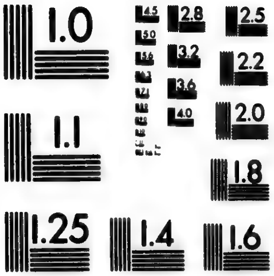


IMAGE EVALUATION
TEST TARGET (MT-3)



where it assembled in the pools of melted water, in the neighborhood of Bellot's Straits. A few of these Ducks annually breed as far to the south as the Bay of Fundy, where Mr. Cheney has several times during the summer found its nest, and has procured specimens for Mr. Boardman.

This bird is seen every winter on the coast of Massachusetts; but only as an occasional visitor, and never in any considerable numbers, except about Nantucket. Some four or five — usually young males — are seen almost every winter in the Boston market.

The Eiders are generally supposed to be exclusively Sea-Ducks — by which name they are universally known on the coast of New England; and it is not infrequently stated that they are not known to occur in fresh water. However rare these exceptions may be, the Common Eider, both in Labrador and on the coast of Norway, has been found spending the breeding-season in inland fresh-water marshes, or on the borders of lakes, several miles from the sea. This species furnishes also a noticeable exception to the general rule of its occurrence, in that it has been found in flocks on the waters of Lake Erie, above the Falls of Niagara, several hundred miles from the sea-coast.

Mr. Charles Linden, of Buffalo, in a letter bearing date of Nov. 21, 1874, writes: "In regard to the occurrence of the King Duck (*Somateria spectabilis*) on Lake Erie, I saw the bird in question, and it proves to be a young male, with the well-marked characteristics of the species clearly and unmistakably developed. Two flocks of these birds, numbering from five to eight each, have been observed this month on Niagara River. Two specimens, male and female, both young, and with very immature plumage, were shot two years ago within five miles of Buffalo, and these were found also to belong to the same species — *spectabilis*. Both were mounted by myself, and are now in the collection of the Buffalo Society of Natural Science."

Mr. Nelson cites this species also as being a rare winter visitant to Lake Michigan and to other parts of Illinois and Wisconsin. There are also in the Smithsonian Collection specimens of young female King Eiders shot in the winter of 1874–1875 on Lake Erie, and of others secured on the Illinois River the same season.

Mr. Hearne makes mention of this species as being quite common in Hudson's Bay. So far as he had noticed, it visits only the sea-coast, and there feeds on fish and fish-spawn. It breeds in that locality, as he speaks of its eggs as being excellent eating, though the flesh is said not by any means to be held in high esteem.

Sir John Richardson speaks of this species as a Sea Duck, and as having never been known by him to occur in fresh water. Its food — he says — is principally the soft mollusca so common in northern waters. This Duck is said to be only partially migratory, rarely moving farther south than is necessary to enable it to get access to open water. The older birds, in the mature plumage, are supposed to be very rarely met with south of the 59th parallel. However true Richardson's statement may be as a general rule, it is not without a considerable number of exceptions.

Although rarely taken within the limits of the United States, the King Duck has occasionally been seen as far south as New York. Mr. Giraud mentions having had the good fortune to procure an adult male of this species in perfect plumage, which had been shot on Long Island Sound in the winter of 1839. He also states that, during the winter, at Egg Harbor, N. J., as well as on the shores of Long Island, young King Eiders are occasionally observed; but the adult specimen in his possession, and one other, were the only individuals in full and mature plumage he had ever known to be procured in the vicinity of New York.

In the Appendix to Sir Edward Parry's First Voyage Colonel Sabine states that this species was seen in great numbers in the North Georgian Islands, the birds having their nests on the ground in the neighborhood of fresh-water ponds, and feeding on the aquatic vegetation.

Sir James C. Ross, also, in the Appendix to his work, says in reference to this species: "Vast numbers of this beautiful Duck resort annually to the shores and islands of the Arctic Regions in the breeding-season, and have on many occasions afforded a valuable and salutary supply of fresh provision to the crews of the vessels employed on those seas. On our late voyage comparatively few were obtained, although seen in very great numbers. They do not retire far to the south during the winter, but assemble in large flocks. The males by themselves and the females with their young brood are often met with in the Atlantic Ocean, far distant from any land, where the numerous crustaceans and other marine animals afford them abundance of food."

Mr. Dall found a single specimen of this species lying dead on the beach near the Rapids on the Yukon. It is known to the Russians as the Pistrik. A series of eggs from St. Michael's, of which the parent was not identified, appeared to belong to this species. Mr. Bannister did not meet with it, and regards it as being extremely uncommon in that region. Mr. Dall afterward observed this species among the winter Ducks at Unalashka, where it was somewhat abundant; but he did not notice any in the Shumagins. There seems to be no evidence of its occurrence on any portion of the west of Oregon or California.

Middendorff includes this species in his list of the birds found in the extreme north of Siberia; and Professor Newton states that it has been several times noticed in Spitzbergen, as also by Loven in Ice Sound in 1857, by Sundevall in Bell Sound the ensuing year, and by Nordenskjöld, who killed two specimens on the northeast coast in 1858; but the latter does not regard it as being of common occurrence, and doubts if it breeds in that region. It has not been met with farther north than lat. 76° 14′. Dr. Malmgren shot one out from a small flock early in July in Safe Haven. Another flock was observed by him in August on Horn Sound Islands. In the Southeast Harbor, Bear Island, July 18, he also saw a very large flock, consisting of hundreds of Ducks and young drakes, with only one or two old drakes among them; but they did not appear to have been breeding there.

Mr. Gillett, in his account of the birds of Nova Zembla, mentions meeting with this Duck in Matthews Strait on the 6th of August. There were several in a small flock, all being apparently immature males; but as their wings were entirely destitute of quill-feathers, they could not fly, but could dive in a wonderful manner, so that they could not be procured without great difficulty. Von Heuglin also met with this species in the same locality.

According to Yarrell, the King Duck is very rare on the British coast. Mr. Bullock found it breeding on Papa Westray, one of the Orkney Islands, in the latter part of June. There were six eggs, covered with the down of the parent, the nest being on a rock which overhung the sea. An egg in Yarrell's collection is described as being 2.50 inches long by 1.75 wide, and of a pale green color.

According to Vieillot, specimens of this bird have been taken in France. Professor Nilsson states that it frequents the most northern parts of the Baltic, of Denmark, and of Norway, and that a few breed in the Faröe Islands and in Iceland. Some of these birds were seen by Audubon in his journey to Labrador; but he did not succeed in finding their nests.

Mr. MacFarlane observed the King Duck breeding on the coast of the Arctic Ocean, in the neighborhood of Franklin Bay; and he writes that when on Island

Point, as he was walking along the sea-beach, a female of this species got up and flew violently away to a short distance, where she alighted on the ground. He at once discovered her nest, which was a mere hole or depression in the ground, about fifty yards from the beach, wholly composed of Eider down, and containing six eggs. Other nests were found on the coast during several seasons, and also among the islands of the Arctic Sea. All appear to have been similar to the one described, and six is the largest number of eggs mentioned as having been found in any one nest.

The eggs of this species are in color of a light shade of olive gray, some being grayish green. They vary considerably in size, ranging from 3.10 to 3.15 inches in length, and from 1.75 to 2.05 in breadth.

GENUS **ŒDEMIA**, FLEMING.

Oidemia, FLEMING, Philos. Zool. II. 1822, 260 (type, *Anas nigra*, LINN.).

CHAR. Feathers at the base of the maxilla forming a nearly straight oblique line from the forehead back to the rictus, advancing scarcely, if at all, on the forehead; bill very deep through the base, where sometimes elevated into a roundish knob, and much depressed toward the end. No white whatever on the plumage.

Two species only of this genus are known, one European, the other American. They are much alike, but may be distinguished as follows: —

COM. CHAR. Entire plumage deep black, the bill partly orange, in the males; dull grayish brown (lighter below), the bill wholly black, in the females.

1. **Œ. nigra.**[1] Bill black, the middle portion on top yellow or orange; nail much depressed, scarcely hooked; base of the maxilla much swollen, entirely black. Wing, 8.00–9.20 inches; culmen, 1.90; depth of maxilla at base, .98–1.00, width, .85; tarsus, 1.50–1.60; middle toe, 2.50. *Hab.* Palæarctic Region.
2. **Œ. americana.** Bill with the basal half of the maxilla, except a stripe along the tomium, yellow or orange, the terminal portion and tomial stripe, only, black; nail arched, decidedly hooked; base of the maxilla slightly or not at all swollen, entirely yellow, or orange. Wing, 8.75–9.50 inches; culmen, 1.65–1.80; depth of maxilla at base, .85–.95, width, .90–1.00; tarsus, 1.65–2.00; middle toe, 2.50–2.80.[2] *Hab.* Northern North America.

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[1] ŒDEMIA NIGRA.

Anas nigra, LINN. S. N. I. ed. 10, I. 1758, 123; ed. 12, 1766, 196. — NAUM. Vög. Deutschl. XII. 1844, 108, pl. 312.

Oidemia nigra, FLEM. Phil. of Zool. II. 1822, 260. — BONAP. Comp. List, 1838, 38. — KEYS. & BLAS. Wirb. Eur. 1840, 86. — MACGILL. Man. II. 181.

Fuligula nigra, NUTT. Man. II. 1832, 423 ("Coast of the United States").

Anas atra, PALL. Zoogr. Rosso-As. II. 1826, 247.

Melanitta nigripes, *M. megauros*, and *M. gibbera*, BREHM, Vög. Deutschl. 1831, 901, 902.

Oidemia leucocephala, FLEM. Brit. An. 1828, 119.

Common Scoter, YARR. Brit. B. ed. 2, III. 317, fig.; ed. 3, IV. 319, fig.

[2] Only one adult male of *Œ. nigra* is accessible to us for measurement, while of *Œ. americana* we have measured eight examples; a larger series of the former would of course alter the results given above to some extent, but would most likely verify the constancy of the difference in proportions indicated by the above figures.

Œdemia americana.

THE AMERICAN BLACK SCOTER.

Anas nigra, WILS. Am. Orn. VIII. 1814, 135, pl. 72 (not of LINN.).

Oidemia americana, SW. & RICH. F. B. A. II. 1831, 450. — BAIRD, B. N. Am. 1858, 807; Cat. N. Am. B. 1859, no. 604.

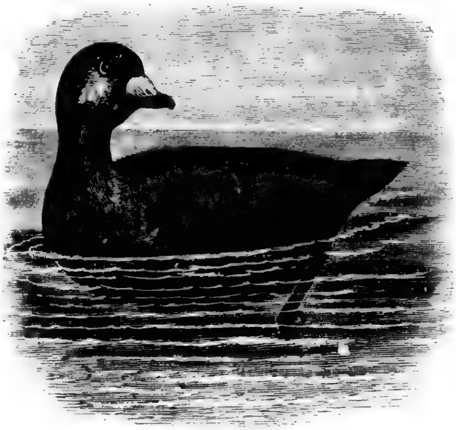
Œdemia americana, COUES, Key, 1872, 293; Check List, 1873, no. 516; 2d ed. 1882, no. 737; B. N. W. 1874, 581. — RIDGW. Nom. N. Am. B. 1881, no. 630.

Fuligula (*Oidemia*) *americana*, NUTT. Man. II. 1834, 422.

Fuligula americana, AUD. Orn. Biog. V. 1839, 117, pl. 408; Synop. 1839, 290; B. Am. VI. 1843, 343, pl. 403.

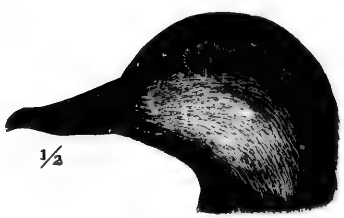
HAB. Coasts and larger inland waters of Northern North America, south to the Great Lakes, New Jersey, and California. Mountains of Colorado (Boulder Co., June!; Mrs. M. A. MAXWELL).

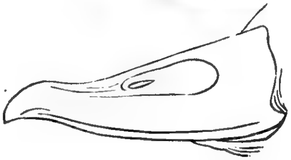
SP. CHAR. *Adult male:* Entire plumage uniform deep black, the neck very faintly glossed with dull violaceous, the feathers somewhat distinctly defined; basal half of the maxilla, except a stripe along the tomium, bright orange (yellowish in the dried skin), the remainder of the bill black; iris hazel; legs and feet dull black. "The bulging part of the upper mandible is bright orange, paler above, that color extending to a little before the nostrils; the rest of the upper mandible, including its basal margin to the breadth of from three to two twelfths of an inch, black, as is the lower mandible. Iris brown. Feet brownish black" (AUDUBON). *Adult female:* Above, dull dark grayish brown, the feathers of the back and scapulars tipped with lighter; lower parts lighter, the pale tips broader, though lacking on the posterior portions; lateral and lower parts of the head and neck nearly uniform very pale grayish brown, quite abruptly defined against the uniform dark brown of the pileum and nape. Bill entirely black. *Young:* Upper parts, jugulum, sides, and flanks, uniform dark grayish brown; sides of head and neck, chin and throat, dirty whitish, tinged with brownish gray, quite abruptly defined against the dark brown of the pileum and nape; abdomen whitish, each feather marked with a dusky grayish brown bar just beneath the surface, some of these bars exposed; anal region and crissum grayish brown, the feathers tipped with white. Bill and feet black.



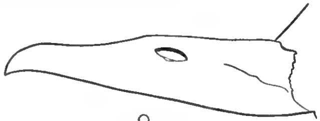
Œ. americana.

Total length, about 17 to 19 inches; extent, 29 to 34. *Male:* Wing, 8.75–9.50; culmen, 1.65–1.80; tarsus, 1.65–2.00; middle toe, 2.50–2.80. *Female*, slightly smaller.

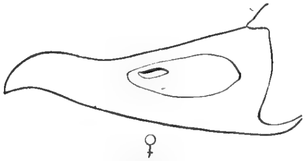



Female.

Having only three European examples of *Œdemia* before us, the material at our command for a satisfactory comparison with *Œ. americana* is not as extensive as could be desired. Two of these specimens, a male and a female received from Schlüter, appear to be the genuine *Œ. nigra*, since they differ very decidedly from all American specimens; but the third, an adult male (No. 15584, Feb. 8, 1844), from Baron von Müller, is entirely identical with the American bird, and may be an American specimen. Setting aside this latter example, the differences between the two species are very obvious, consisting of the following points: The male of *Œ. nigra* has the bill black, including the basal knob, the culmen having a shield-shaped patch of yellow, extending back to the base of the knob, and reaching forward nearly to the nail; the end of the bill is altogether more depressed than in *Œ. americana*, the top of the nail being nearly flat, instead of very strongly convex. The female also has the bill conspicuously flattened terminally, as in the male, and also at the base, the maxilla being only about .55 instead of .70 deep. (See accompanying outline figures of the maxillæ of the females of the two species.) There is scarcely any difference in plumage, in either sex, between the two species.


♀

Œ. nigra.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Œ. americana.

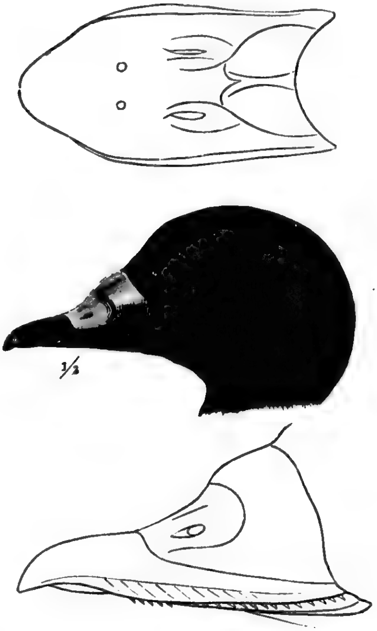
Except the differences of form and plumage, there is very little in the history of this bird to distinguish it from its common associates, the Velvet and the Surf Ducks, the habits, movements, and distribution of these different species appearing to be substantially the same. This Duck is common in the winter on both the Pacific and the Atlantic coasts, and along their entire length, at different portions of the year. It is perhaps a trifle earlier in its migrations southward, and it may linger later in the spring. During September and October, and again in March and April, it is especially common on the coast of New England, and is found present to a greater or less extent during the whole winter. It breeds in the extreme north, but does not appear to have been found by Mr. MacFarlane at such times in company with the Surf and Velvet Ducks in the neighborhood of Fort Anderson. It visits the Great Lakes, and is especially common in the winter upon Lake Michigan.

Sir John Richardson says, in regard to this Duck, that it feeds almost exclusively in the open sea, that its flesh is always oily and strongly flavored, and that it frequents the shores of Hudson's Bay, breeding there between the 50th and the 60th parallels of latitude. He also states that he never saw it at any season of the year in the interior of the country.

Hearne writes that at his time — 1780 — this Duck was one of the most common in Hudson's Bay, where it visited the sea-coast exclusively, and was never found in the interior, feeding chiefly on fish and their spawn. Its flesh was by no means held in esteem, but the eggs were quite palatable. Mr. Murray and Captain Blakiston both cite this species as still being abundant in the region adjacent to Hudson's Bay.

On the Pacific coast its presence has been noted from Alaska to Southern California, and Mr. Bannister found it common on the Island of St. Michael's; and he states that, except on one occasion, he has never seen it in any of the small fresh-water ponds of that island. Ordinarily it kept to the salt-water, even flying round points of land rather than directly across them.

The name of this Duck in the Eskimo dialect, according to Mr. E. Adams ("Ibis," 1878), is *Too-tár-lik;* and it is spoken of by him as being rather late in its arrival on the shores of Norton Sound, none of this species coming until the 19th of May. Toward the end of the month several pairs had taken possession of the larger lakes near St. Michael's, where they remained to breed, seldom going out to sea, but keeping together in small flocks in the middle of the lake. Their nests were carefully secreted in the clefts and hollows about the steep banks of the lakes, close to the water, and were built of coarse grass, well lined with feathers and down. The females had their eggs at the time of his leaving, which was in June.



Male.

Mr. Dall speaks of this as being a salt-water Duck, abundant at the mouth of the Yukon, but not going up that river for any distance. He was so fortunate as to find it breeding near Pastolik, June 17, discovering a nest which contained two eggs. These he describes as being quite white, and large as compared with the size of the bird. The nest was placed on the ground, on a small island, in a clump of willows, and was well supplied with dry grass, feathers, leaves, and moss. Since that Mr. Dall has met with this species on the Aleutian Islands, where he found it not uncommon during the winter, but migrating with the other Ducks in the spring. It was noticed both at Unalashka and on the Shumagins, and it was also seen on the coast of Vancouver Island by Mr. R. Browne. Dr. Cooper speaks of finding it less abundant along the entire coast of California than the other Surf Ducks, but associating with them, and with habits almost exactly similar to theirs.

Mr. Giraud speaks of this Duck as being common in winter on the Atlantic side of Long Island. It is there also one of that class of Ducks known to fishermen and hunters as "Coots." By some it is called the "Butter-billed Coot" — a name by which it is also generally known to sportsmen in New England. It is also there called the "Hollow-billed Coot" — a designation applied in New England exclusively to the Surf Duck. On the Long Island shore this bird passes its time in the open sea in company with the Velvet and the Surf Ducks. Like other diving Ducks, it is occasionally taken by being entangled in the fishermen's nets.

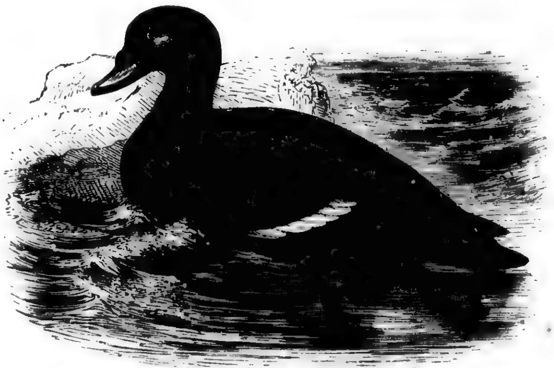
According to Audubon the Scoter Duck ranges along our entire southern coast, even as far as New Orleans — or rather, the mouth of the Mississippi River. He also states that a few of this species remain in Labrador to breed, and that some of his young companions met with their nests on the 11th of July; but he is either in error in the description he gives of the eggs found, or else they were not those of this Duck. The nest, he says, was placed at the distance of about two yards from the margin of a large fresh-water pond, about a mile from the shore of the Gulf of St. Lawrence, under a low fir, in the manner often adopted by the Eider Duck, whose nest it somewhat resembled, although much smaller. It was composed externally of sticks, moss, and grasses, and was lined with down mixed with feathers. The eggs — eight in number — were nearly ready to be hatched. Audubon describes them as being 2.00 inches in length and 1.63 in breadth, of an oval form, and of a pale yellowish color. The identified eggs of this species — so far as I know — are uniformly white. Audubon afterward found a female with seven young ones, of which she took such affectionate care that none of them fell into his hands. When they had become fatigued by diving she received all of them on her back, and, swimming very fast, carried them to the shore, where they escaped by hiding among the tall grass.

Eggs of this species (Smithsonian Institution, No. 14602), obtained by Mr. Dall at Pastolik, are of a pinkish ivory-white, varying in length from 2.65 to 2.70 inches, and with a breadth of 1.60.

GENUS **MELANETTA**, BOIE.

Melanitta, BOIE, Isis, 1822, 564 (type, by elimination, *Anas fusca*, LINN.).
Melanetta, GRAY, 1840; List Gen. 1841, 95. — BAIRD, B. N. Am. 1858, 805.
Maccranas, LESS. Man. II. 1828, 414 (same type).

CHAR. Feathers at the base of the bill extending forward almost to the nostril in two prominent angles — one on the side of the maxilla, the other on top, at the base of the culmen; sides of



M. velvetina.

the maxilla rather sunken or compressed above the tomium. Colors uniform black or brown, with a white speculum on the wings, the adult male with a white spot immediately beneath the eye.

This genus differs from *Œdemia* and *Pelionetta* — to which it is otherwise nearly allied — in the form of the bill, particularly in the outline of the feathering at the base, as defined above. Two species only are known, one peculiar to Northern North America, the other to the Palæarctic Region, but occurring also in Greenland and Alaska. Their differential characters are as follows: —

1. **M. fusca.** Maxilla much swollen near the rictus, the base of the culmen only slightly elevated; reddish color of the maxilla crossed on each side by a black line, running obliquely from the black above the nostril to that on each side of the nail. *Adult male:* Wing, 10.80–11.40 inches; culmen, 1.80–1.70; depth of maxilla at base, 1.10; tarsus, 1.70–1.80; middle toe, 2.75 (two examples). *Hab.* Palæarctic Region, Greenland, and Alaska.
2. **M. velvetina.** Maxilla deeply sunken near the rictus, the base of the culmen elevated into a prominent knob; reddish color of the maxilla not crossed by a black line. *Adult male:* Wing, 10.65–11.40 inches; culmen, 1.40–1.70; depth of maxilla at base, 1.10–1.30; tarsus, 1.80–2.10; middle toe, 2.70–2.90 (eleven examples[1]). *Hab.* Northern North America.

Melanetta velvetina.

THE VELVET SCOTER.

Anas fusca, Wils. Am. Orn. VIII. 1814, 137, pl. 72 (not of Linn.).
Fuligula (*Oidemia*) *fusca*, Bonap. Synop. 1828, 390. — Nutt. Man. II. 1834, 419.
Oidemia fusca, Sw. & Rich. F. B. A. II. 1831, 449.
Œdemia fusca, Coues, Check List, 2d ed. 1882, no. 738.
Fuligula fusca, Aud. Orn. Biog. III. 1835, 454, pl. 247; Synop. 1839, 280; B. Am. VI. 1843, 332, pl. 401.
? Fuligula bimaculata, Herbert, Field Sports, 2d ed. II. 1848, 366, fig. (young).
Oidemia (*Pelionetta*) *bimaculata*, Baird, B. N. Am. 1858, 808.
Oidemia velvetina, Cass. Pr. Ac. Nat. Sci. Philad. V. 1850, 126.
Melanetta velvetina, Baird, B. N. Am. 1858, 805; Cat. N. Am. B. 1859, no. 601. — Ridgw. Nom. N. Am. B. 1881, no. 632.
Œdemia fusca, var. (?), Coues, Key, 1872, 294; Check List, 1873, no. 517.
Œdemia fusca, b. (?) *velvetina*, Coues, Birds N. W. 1874, 582.
Oidemia Deglandii, Bonap. Rev. Crit. Degland, 1850, 108.

Hab. Northern North America; chiefly maritime, but occurring on various inland waters; south in winter to the Middle States, Great Lakes, Mississippi River near St. Louis, Illinois River, and Southern California.

Sp. Char. *Adult male:* Base of the culmen elevated into a prominent knob; lateral base of the maxilla sunken beneath the feathering of the lores. Plumage uniform brownish black. A crescentic spot beneath the eye, and extending backward for half an inch or more, secondaries, and greater wing-coverts, white. Knob of the bill, with base, and margin of the maxilla, black; "sides of the bill red-lead, fading into orange;" "nail vermilion, the anterior flat portion of the upper mandible whitish;" iris "white tinged with straw-yellow; legs scarlet, with black webs, and a tinge of black on the joints" (Nuttall).[2] *Young male:* Dark sooty-brown, the head and neck sooty-black; white on wings as in the adult, but no white spot beneath the eye. *Adult female:* Uniform grayish fuliginous, the wings darker; white speculum as in the male, but no white about the head, or with faint indication of white spot at base of maxilla and behind the eye.

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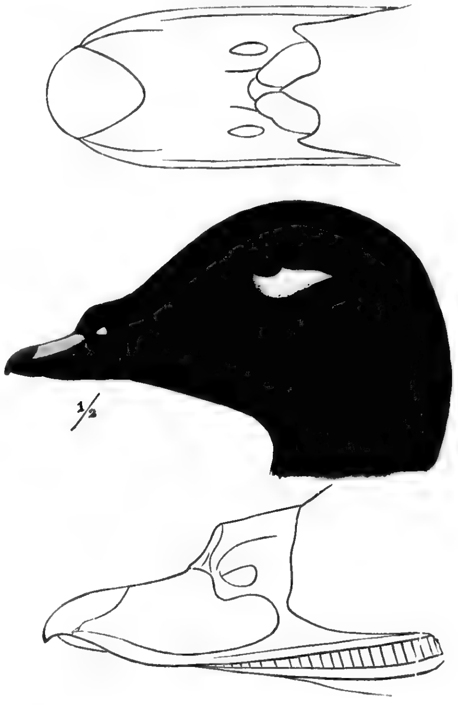
[1] With the exception of the culmen, which in only one of eleven specimens reaches the *minimum* of the same in *M. fusca*, the *average* measurements of this series would approximate much more nearly to the maximum than to the minimum.

[2] Audubon's description of the Velvet Scoter refers wholly to the European species (*M. fusca*), which has the bill and feet colored very differently from the American bird.

In summer, feathers of the back, scapular region, and jugulum narrowly tipped with light brownish gray. Bill uniform dusky, iris yellow; feet as in the male, but duller in color.

Total length, about 19.75 to 22.50 inches; extent, 36.00 to 40.00; wing, 10.75–12.00; commissure, 2.82; tarsus, 2.08.

This well-known North American form — the Velvet Duck — is an Arctic species during the breeding-season; and in the fall, winter, and spring is distributed along the entire Atlantic and the Pacific coasts, to an extent varying with the severity of the season and the abundance of the food. It is eminently a Sea-Duck, resorting to inland waters chiefly during the brief season of reproduction. It is also a winter visitant to the Great Lakes — especially Michigan — and to the rivers of Illinois. It is also said to occur on the Pacific coasts of Asia. Captain Blakiston is very sure that he obtained this species at Chin-Kiang, on the Yang-tse River, in China, the specimens there procured being identical with those he saw on the Pacific coast of North America; and he also mentions finding this Duck on Hudson's Bay. Mr. Murray also reports it as occurring between Hudson's Bay and Lake Winnipeg; and Mr. Ross met with it on the Mackenzie River as far north as the Arctic Ocean.

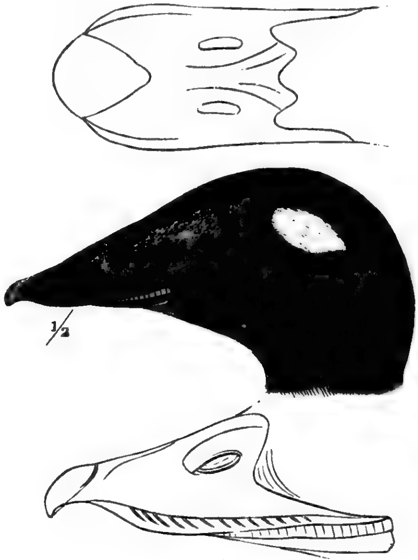


Male.

On the New England coast this species makes its appearance in the fall from the middle to the last of September, coming in flocks of moderate size, the old birds often preceding the young by several weeks. It is universally known from Eastport to the Chesapeake as the "White-winged Coot." It is much hunted; and although its flesh is dark, coarse, and strongly flavored, it is esteemed by those who have become accustomed to its flavor. In its flight, except when the weather is stormy, this bird passes very high; and when it is thus out of their reach hunters resort to the expedient of shooting, in order to alarm the flock. This often has the desired effect; the foolish birds, alarmed at the unusual noise, make a sudden plunge in the direction of the water, as if that element alone could give them safety, and in their descent present the opportunity desired by the hunter. This habit is peculiar to the Velvet Duck, and has not been noticed either in the Scoter or the Surf-Ducks.

On Long Island, according to Giraud, large flocks of this Duck keep outside of the beach, and are seen along the entire Atlantic district, where they subsist by fishing.

They seldom visit the small bays, unless driven by the storms, when they are also sometimes seen passing over the land. During their long migrations they fly high, performing in silence extended journeys from their northern breeding-places. They arrive off the coast of Long Island about the middle of October, and remain there until about the middle of April. This bird, when well supplied with down and in full plumage, can only be brought down by a gun heavily charged with powder and shot. When this Duck is present in large numbers on the south shore of Long Island, the hunters watch for a favorable opportunity when the surf is down, and form a line with fifteen or twenty boats about two or three gunshots apart; by adopting this method of attack it becomes difficult for a flock to escape entirely. The boats used for this purpose are light skiffs, each containing but a single person, in order that the waves may be ridden with safety. But this mode of shooting can be practised only by experienced hunters; for if the wind rises suddenly from the south, a dangerous surf is created, in which even the most skilful boatmen are occasionally drowned. According to Mr. Giraud, the flesh of the Velvet Duck is not held in high esteem, but is dark-colored and fishy; yet a large number of these birds find a ready sale in the New York market. Richardson speaks of this species as feeding principally in the open sea, and as having strong and oily flesh. This bird is said to breed on the Arctic coast, and to move southwardly in company with the Surf and the Long-tailed Ducks. On its way it stops on the lakes of the interior so long as they remain open, and again on the shores of Hudson's Bay, feeding on tender shellfish and mollusca.



Female.

On the Pacific coast it is met with, according to the season, from Alaska to Southern California. Mr. Dall found it not uncommon on the Lower Yukon; and he obtained a female fifty miles below the fort. Shortly afterward — June 23, 1866 — he secured several of the young ducklings, still in their downy coat. Mr. Bannister thinks that this species occurs at St. Michael's; but he did not identify it with certainty. Mr. Bischoff obtained it in great abundance at Sitka. Mr. Dall also speaks of it as having been killed by him, Oct. 27, 1871, at Unalashka; and he noticed its presence there at intervals throughout the winter. It was not seen on the Shumagins, though it may, and probably does, occur there. It is only a winter visitor in that region.

Mr. R. Browne found this species a winter visitor on Vancouver Island.

Dr. Cooper informs me that on the coast of California this species is often called the Black Surf Duck. It is common in winter along the entire sea-coast of California, and a few superannuated individuals remain throughout the summer. It frequents almost exclusively the salt water in the open bays and the outer beaches, very rarely appearing on the fresh ponds, and only on those near the beach. The main body of these Ducks arrive about the first of October, and remain until April, together with the other Surf Ducks with which they associate. Their food consists of small fish, mollusca, crabs, and the like; and for these they dive in deep water. Their habits are to some extent nocturnal, and during the day they often float out in the centre of the Bay, remaining asleep for hours. At such times they may be approached; but usually they are very vigilant, flying out of gunshot, or diving. Dr. Cooper has never heard this bird making any other noise than that produced by the flapping and whizzing of its wings as it rises with difficulty from the water.

Early in April the Velvet Ducks collect in large flocks preparatory to moving northward to their breeding-places. They pass along the shore, at a short distance from it, and at times seem to form an almost continuous line. While in the Bay of Fundy, in the spring of 1833, Audubon went with his party to a projecting cape, around which this Duck was passing from daylight until evening — approaching the shore when it blew hard from the sea, and affording abundant opportunities for the sportsman. In Labrador he found the waters covered with dense flocks of this species, and others continued to arrive from the St. Lawrence for several days in succession. This was about the middle of June, and the season was an unusually late one, the fishermen informing him that these Ducks usually passed a fortnight earlier. A few of them remained to breed on the southern coast of Labrador; and a large number of sterile individuals also pass the summer in the Bay of Fundy.

Those which bred in Labrador built their nests from the 1st to the 10th of June; and July 28 Audubon caught several birds a few days old. The nests were placed within a few feet of the borders of small lakes distant a mile or two from the sea, usually under low bushes; and they were formed of twigs, mosses, and various plants matted together. The nests were large, and almost flat, several inches thick, lined with some feathers of the female, but without down. The eggs were usually six in number, measuring 2.75 inches in length and 1.88 in breadth, of a uniform pale cream-color, tinged with green.

The young birds procured on the 28th of July were about a week old; and Audubon could even then readily distinguish the males from the females — the former having a white spot under the eye. The down with which they were covered was stiff and hair-like, of a black color, except under the chin, which was white. The ducklings swam with so much ease that it was impossible to catch them while in the water, as they would dive with great dexterity, the mother in the meanwhile manifesting the greatest anxiety, calling to her brood with short squeaking notes — which, however, were by no means unpleasant to the ear.

The Velvet Duck dives with great agility, and when wounded can only be taken with difficulty.

Mr. MacFarlane met with this bird breeding in considerable numbers on the Lower Anderson River, in the neighborhood of the Fort, on the Barren Grounds; and also quite as frequently in the wooded country. The nests were always on the ground, near fresh water, and all contained more or less down. The number of eggs ranged from five to eight. One nest, taken June 14, was on the ground in a small clump of woods near Fort Anderson, and was made of feathers, down, etc. Another one, found July 3, contained seven eggs, and was in a clump of small spruce, where it was entirely concealed. A third, taken June 22, was found at the foot of a low pine, shaded by its branches, and almost entirely hidden; it was made of down, with the addition of a few feathers. All the other nests were essentially similar in character to these — being invariably depressions made in the ground, at the foot of small trees, and lined almost entirely with down and feathers.

Specimens of this bird were taken by Mr. Kennicott near Fort Resolution, June 5, 1860; and, a little later, on the Yukon River. In this neighborhood it was also found by Mr. Lockhart in June, 1861 and 1862.

This Duck is very rarely seen on any of the interior waters of the United States. A male in very shabby plumage was shot near Black-hawk Island, in Lake Koskonong, Wisconsin, Oct. 12, 1860; and this specimen is still in Professor Kumlien's collection.

Eggs of this species are of a uniform pale pinkish cream-color. Examples in the Smithsonian Collection from the Yukon (Nos. 6679 and 6678) measure 2.70 by 1.90 inches, and 2.75 by 1.80.

Melanetta fusca.

THE EUROPEAN VELVET SCOTER.

Anas fusca, Linn. S. N. ed. 10, I. 1758, 123; ed. 12, I. 1766, 196. — Naum. Vög. Deutschl. XII. 1844, 123, pl. 313.

Melanitta fusca, Boie, Isis, 1822, 564.

Melanetta fusca, Ridgw. Pr. U. S. Nat. Mus. Vol. 3, 1880, 205, 222; Nom. N. Am. B. 1881, no. 631.

Oidemia fusca, Stephens, Shaw's Gen. Zool. XII. pt. ii. 1824, 216. — Bonap. Comp. List, 1838, 57. — Keys. & Blas. Wirb. Eur. 86. — Macgill. Man. II. 180. — Gray, Gen. III. 625; Cat. Brit. B. 1863, 206.

Anas carbo, Pall. Zoog. Rosso-As. II. 1826, 244.

Anas fuliginosa, Bechst. Naturg. IV. 962, pl. 36.

Melanitta Hornschuchii, *M. megapus*, and *M. platyrhynchos*, Brehm. Vög. Deutschl. 1831, pp. 904, 906, 907.

Velvet Scoter, Yarr. Brit. B. ed. 2, III. 312, fig.; ed. 3, III. 314, fig.; et Auct.

Hab. Palæarctic Region; accidental in Southern Greenland (Reinhardt, Vid. Med. Nat. For. Kjöbenhavn, 1879, 1); Alloknagik Lake, Alaska, July 20, 1883; C. L. McKay (spec. in Nat. Mus. Coll.).

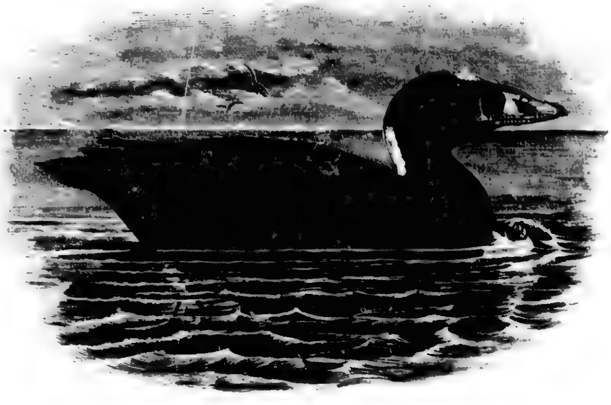
Sp. Char. *Adult male:* Maxilla much swollen near the rictus, the base of the culmen only slightly elevated, orange or reddish of the maxilla crossed on each side by a black line running obliquely from the black above the nostril to that on each side of the nail. General color brownish black, relieved by a white, somewhat crescentic, patch beneath the eye, and extending somewhat behind it, and a white speculum on the wings (involving the secondary quills). "The upper basal prominence of the bill, the nostrils, part of the lateral prominences, the margins of the upper mandible, and a streak on each side of the unguis black; the sides rich orange, the unguis and part of the ridge reddish flesh-color; the basal half of the lower mandible black, the rest lake-red. The iris is grayish white, with an external dusky ring. The inner side of the tarsus, of the hind toe and its web, as well as of the other toes, with the whole loose web of the inner orpiment-orange; the outer side of the tarsus, hind toe and its web, as well as of the other toes, bluish carmine, or lake; the sole of the toes and the webs above brownish black; the claws black" (Macgillivray). *Adult female:* Sooty grayish, or grayish dusky, darker above; wing with a white speculum, but no white spot on side of head. Bill entirely dusky; feet as in the male, but colors duller.

Wing, 10.65–11.40 inches; culmen, 1.40–1.70; depth of maxilla at base, 1.10–1.30; tarsus, 1.80–2.10; middle toe, 2.70–2.90.

GENUS **PELIONETTA**, KAUP.

Pelionetta, KAUP, Entw. Europ. Thierw. 1829, 107 (type, *Anas perspicillata*, LINN.).

CHAR. Feathers on the forehead extending in a broad strip nearly or quite as far as the posterior end of the nostrils, but those of the lores not advancing forward of the rictus, the lateral base of the maxilla in the adult male greatly swollen, and with the basal outline convex, nail very large and broad, but narrowed terminally. No white on the wing, but the head with large white patches (indistinct in the female and young).



P. perspicillata.

Except in the form of the bill, as described above, this genus very closely resembles *Melanetta* and *Œdemia*, but is sufficiently distinct. Only one species is known.

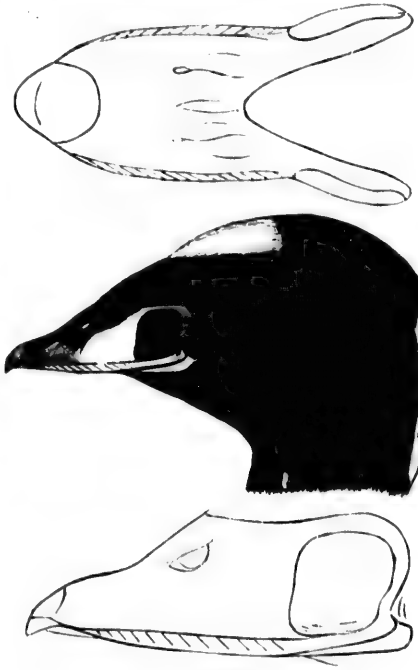
Pelionetta perspicillata.

THE SURF DUCK.

Anas perspicillata, LINN. S. N. ed. 10, I. 1758, 125; ed. 12, I. 1766, 201. — WILS. Am. Orn. VIII. 1824, 49, pl. 67.
Fuligula (*Oidemia*) *perspicillata*, BONAP. Synop. 1828, 389. — NUTT. Man. II. 1834, 416.
Oidemia perspicillata, STEPHENS, Gen. Zool. XII. ii. 1824, 219. — SW. & RICH. F. B. A. II. 1831, 449.
Œdemia perspicillata, COUES, Key, 1872, 294; Check List, 1873, no. 518; 2d ed. 1882, no. 739; B. N. W. 1874, 582.
Pelionetta perspicillata, REICH. Syst. Av. 1852, p. viii. — BAIRD, B. N. Am. 1858, 806; Cat. N. Am. B. 1859, no. 602. — RIDGW. Nom. N. Am. B. 1881, no. 633.
Fuligula perspicillata, AUD. Orn. Biog. IV. 1838, 161, pl. 317; Synop. 1839, 289; B. Am. VI. 1843, 337, pl. 402.
Pelionetta Trowbridgii, BAIRD, B. N. Am. 1858, 806; Cat. N. Am. B. 1859, no. 603.
Œdemia perspicillata, var. *Trowbridgii*, COUES, Key, 1872, 295; Check List, 1873, no. 518 *a*.
Œdemia perspicillata, b. *Trowbridgii*, COUES, B. N. W. 1874, 582.
Œdemia perspicillata Trowbridgii, COUES, Check List, 2d ed. 1882, no. 740.

Hab. Coasts and larger inland waters of Northern North America, south in winter to Atlantic coast of the United States, to the Ohio in the interior, and Lower California, on the Pacific side; accidental in Europe. Jamaica (and other West India islands?) in winter.

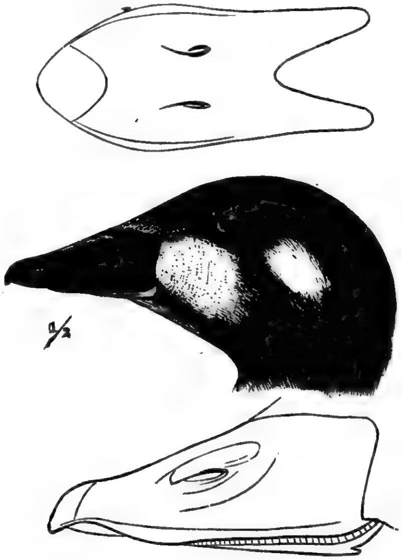
Sp. Char. *Adult male:* General color deep black, very intense above, more sooty on the lower surface; a white patch on the forehead, the anterior outline semicircular or somewhat angular, and reaching forward a little in advance of the lateral base of the bill, the posterior outline almost directly transverse, and extending back to a little past the middle of the eye; nape with a somewhat shield-shaped, or cuneate, longitudinal patch of pure white, having the upper outline almost directly transverse. Bill chiefly orange-red, deeper (intense red in some specimens) above the nostrils; swollen base of the maxilla with a large, irregularly roundish, somewhat quadrate, or trapezoidal, spot of deep black, with a light-colored space (bluish white in life) in front, as far as the nostrils; nails duller orange, or dingy grayish; iris yellowish white; feet orange-red, the webs greenish dusky; claws black. "Upper mandible with a nearly square black patch at the base, margined with orange, except in front, where there is a patch of bluish white extending to near the nostrils, prominent part over the nostrils deep reddish orange, becoming lighter toward the unguis, and shaded into rich yellow toward the margins; the unguis dingy grayish yellow; lower mandible flesh-colored, unguis darker. Iris bright yellowish white. Tarsi and toes orange-red, the webs dusky, tinged with green; claws black" (Audubon). *Adult female:* Pileum and nape brownish black; rest of the head ashy brown, with an indistinct whitish patch (not always indicated) on the lower anterior portion of the lores, bordering the lateral base of the bill; upper parts brownish dusky, the contour feathers sometimes showing paler tips; lower parts grayish brown, becoming nearly white on the abdomen, the feathers of the breast and sides tipped with the same, the anal region and crissum uniform dusky. Bill greenish black, scarcely swollen at the base, where the black spot of the male is slightly, if at all, indicated; iris yellowish white; "feet yellowish orange, webs grayish dusky, claws black" (Audubon). *Young:* Similar to the adult female, but head with two quite distinct whitish patches, one against the lateral base of the bill, the other over the auriculars, behind and below the eye; plumage above, more uniform than in the adult female, and feathers everywhere of a softer texture.



Male.

Total length, about 19.00–20.00 inches; extent, 31.00–34.00; wing, 9.25–9.75; culmen, 1.30–1.60; from tip of bill to lateral base, 2.35–2.60; distance through base of bill horizontally, between most prominent point of lateral swellings, 1.10–1.40; tarsus, 1.55–1.85; middle toe, 2.15–2.55 (twenty examples).

There is considerable variation among individuals of this species, but we find no constant difference between specimens from the Atlantic coast and those from the Pacific. Occasionally, in specimens which appear to be fully adult (as No. 12727, ♂, Washington, D. C.; C. Drexler), the white patch on the crown is entirely absent, that on the nape being present, as usual. An example from Sitka (No. 46266; F. Bischoff) has, in addition to the usual white patches (on crown and nape), a white bar across the lower part of the foreneck, and a longitudinal streak of the same on the chin. The bill, in fully adult examples, occasionally has other black markings besides the large black spot near the base. Thus, No. 31727, Yukon River, Alaska, has a black spot at the base of the culmen; in some others there is a small black spot on each side of the maxilla, near the end. Dr. Otto Finsch has sent to Professor Baird drawings of the head of a Scoter from Alaska, which is quite different in many respects from any example we have seen of *P. perspicillata.* The bill is very different in shape from that of the common species, being in every way more slender, the greatest breadth of the maxilla anteriorly being but .75 of an inch, while the transverse diameter through the base, which is but slightly swollen, is only 1.00 inch; the length from the culmen is about 1.35, to the loral feathers, 2.10; the culmen is much less elevated above the nostrils, and the tip of the bill less depressed. The prevailing color of the bill is black, the nail lighter, but across the culmen, just behind the nail, and continued back in a narrow stripe, between the nostrils and the tomium, almost to the base, is a mark (having somewhat this form, W) of salmon-color or orange, becoming yellow posteriorly. The head and neck are deep black, with a longitudinal, cuneate, nuchal patch of white, as in *P. perspicillata,* and the frontal spot is also distinctly indicated, though somewhat broken by the admixture of black feathers; but in addition to these markings, the lores are covered by a large subquadrate white patch extending from the lateral base of the bill, for its entire length, back about .75 of an inch, almost touching the eye above; there is also a white ovate spot immediately above and behind the eye, and another of crescentic form on the lower eyelid. The differences in the markings of the head would not alone be sufficient to indicate more than a variation of plumage of the common species; but the form and coloration of the bill is so different as to suggest the possibility of the specimen being a hybrid between *P. perspicillata* and *Melanetta fusca* or *velvetina.* The wing, however, is said to lack the white speculum of *Melanetta.*



Female.

The three examples (from San Diego, Cal.) upon which the *P. Trowbridgii* was based, differ but little from some eastern specimens of *P. perspicillata,* while other Pacific coast specimens, including examples from as far south as the coast of Lower California, are unquestionably identical with the eastern bird.

The Surf Duck is a peculiarly North American species, nearly identical, both as to its habits and its distribution, with the Velvet Duck, both species being known on the Atlantic coast to hunters and fishermen as Coots; this term being used there as a synonyme of the name "Sea Duck." The Surf Duck is generally known in New England as the "Skunk-head Coot," and also to some persons as the "Hollow-billed Coot." Its young and female, as well as the young and female of the Scoter (*Œdemia* *americana*), are indiscriminately called "Gray Coots;" but some persons apply the term Gray Coot to the young and females of the Surf Duck only.

In Europe this species appears to have been found only as an occasional and accidental visitor. According to Mr. Selby, specimens of this Duck have been taken on the Shetland and Orkney islands. Others have been secured in different parts of Scotland and England. Vieillot states that it sometimes appears on the coast of France. A single example was taken in 1818 in Switzerland, and others are recorded as coming from Germany and Scandinavia; but these instances are few in number, and the appearance of this species in any part of Europe is decidedly an uncommon occurrence.

It is cited by Professor Reinhardt as being a visitant in Greenland — where, however, only a few individuals are known to have been taken. It was found abundant on the Mackenzie River by Mr. Ross; Captain Blakiston received a number of specimens from York Factory, on Hudson's Bay; and Mr. Murray also obtained it in the same locality, where it appears only occasionally as a migrant.

From September to April the Surf Duck is common on the whole Atlantic coast, from Nova Scotia to North Carolina, its presence apparently being regulated as much by the abundance of its food as by the severity of the weather. Until midwinter the flocks gradually move southward, their food being more abundant in warmer waters, and after February as gradually find their way back. In April a general migration northward becomes very perceptible, and by the end of that month the immense procession of this very abundant species has passed, beyond the Bay of Fundy, toward its breeding-places, only the crippled, immature, or superannuated individuals having been left behind; and these remain unmated in the more southern latitudes through the whole summer.

Mr. Giraud states that by the hunters of Long Island this species is known as the "Spectacled Coot," and also as the "Surf Coot." It associates with the Velvet Duck, and its habits are substantially the same as those of that species. He relates that when at Montauk Point, in the autumn of 1834, on walking out in the morning, after a very stormy night, and looking up at the lighthouse, he was surprised to see a bird suspended from the wire frame by which the glass is protected. On taking it down, he found it to be a Surf Duck. The wind having been very high the night before, and the water having doubtless become so rough that the bird was obliged to take wing, it was attracted by the light, and flying with great force, thrust its head through the wires, and in this situation was strangled. The flesh of the Surf Duck Giraud found to be dark-colored and fishy.

Sir John Richardson states that this bird seeks its food principally in the sea; that its flesh is oily and highly flavored; and that he found it breeding on the Arctic coast, from whence it migrated southward, in company with the Velvet and the Long-tailed Ducks. In these migrations southward it stops both on the shores of Hudson's Bay and on the lakes of the interior — at least as long as these remain open — feeding on mollusca and shellfish. It is rare in Bermuda, there being only two instances on record of its occurrence there — one in Hamilton Harbor, in January, 1847, and another in the Pembroke Marshes, October, 1854.

This species is as abundant on the Pacific as on the Atlantic coast. It was obtained, with the eggs, at Sitka, by Bischoff, and Mr. Dall — although he did not fully identify it — thinks that it is found at the mouth of the Yukon River. Mr. R. Browne also met with it on the coast of Vancouver Island.

Mr. Nelson mentions the Surf Duck as being a common winter resident upon Lake Michigan, and says that it also occurs throughout the State of Illinois during that season. A large number of examples of this species were taken near the Calumet Marshes during the fall of 1875, and many others were seen, arriving the last of October and departing toward the end of March. A single specimen of this bird, in immature plumage, was procured on the Wabash by Professor Stein, in October, 1875.

It is said to be abundant on the Pacific coast near San Pedro; but it was not found inland, nor on any of the interior lagoons, apparently never leaving the sea and its estuaries. Dr. Cooper also writes that this is an abundant species in the winter along the entire Pacific coast, associating with the other Surf Ducks, and having habits similar to theirs. Being but little hunted, and having but few enemies among the wild animals, many of this species become very old, and linger along the southern coast in large flocks — some of them finally dying of old age. The long rainy seasons are frequently fatal to them, as at that time they seem to be very delicate, and are peculiarly subject to the influences of the weather. Many become very thin, and even blind, at the time of assuming their spring plumage, and swim, unconscious of danger, near the wharves and shores, or after storms are found dead along the beaches.

Audubon states that in his visit to Labrador, in the spring of 1833, he found this species not the least numerous of the various kinds of Ducks with which the waters of that region seemed to be alive. The numbers of this species that passed the shores of Labrador bound for the far north exceeded all his previous conceptions. He noticed that a few pairs had remained in the neighborhood of Little Macatina, and on examining a fresh-water marsh he suddenly started a female Surf Duck from her nest. This was snugly placed among the tall leaves of a bunch of grass, and raised a few inches above the roots. It was entirely made of withered and rotten weeds, the former being circularly arranged over the latter, producing a well-rounded cavity 6.00 inches in diameter, and 2.50 deep. The borders of the inner cup were lined with the down of the bird, and in it there were five eggs. These were 2.31 inches in length, by 1.63 in breadth, and about equally rounded at both ends. The shell was perfectly smooth, and of a pale yellowish or cream color.

Audubon states that Dr. Bachman met with this Duck in the winter as far south as Charleston, S. C. He speaks of it as being a powerful swimmer and an expert diver, but as rising from the water with some difficulty, and, when once under way, flying with great rapidity. The female, as she rises from her nest, utters a rough guttural cry; but this Duck is generally a very silent bird. Audubon was assured that in Newfoundland this species breeds in considerable numbers in the lakes and ponds of the interior. Its stomach was found to contain fish of different kinds, several species of shellfish, and quantities of coarse gravel.

Mr. Lockhart observed this species breeding near the Arctic Sea. The nest was on the edge of a small portage between two lakes, and concealed under the spreading branches of a stunted pine-tree.

Mr. MacFarlane found the Surf Duck breeding in considerable numbers in the neighborhood of Fort Anderson and on the Lower Anderson River, and a nest containing six eggs was obtained July 5 on the margin of a small lake. It was not distinguishable from the nests of the Velvet Duck. Another nest, containing eight eggs, was found, June 25, on a ridge of ground at the foot of a dry stunted pine, and was made of dark-colored down, being entirely concealed from view by the lower branches of the pine-tree. This species of Duck was very numerous in the wooded country, but the nests were found only with great difficulty. It was afterward ascertained to be very abundant on the sea-coast about Franklin's Bay. All the nests found appear to have been of the same style and pattern, and nothing is said of any other material than down being used in building them. The number of eggs varied from five to eight; but the latter number was found in only a single instance.

This Duck was seen breeding near Fort Resolution by Mr. Kennicott in June, 1860, and on the Yukon River both by him and Mr. Lockhart. It was found near Fort Simpson by Mr. B. R. Ross and Mr. McDonald; near Fort Rae by Mr. L. Clarke; and at La Pierre House by Mr. J. Flett.

We have no data in reference to any peculiarly distinctive habits of the so-called *P. Trowbridgii* that would enable us to state whether these exhibit anything of a specific character. The individuals upon which this supposed species was founded were taken by Lieutenants Trowbridge and Williamson at San Diego in the winter of 1853. Two other specimens have since been obtained by Mr. Bischoff at Sitka.

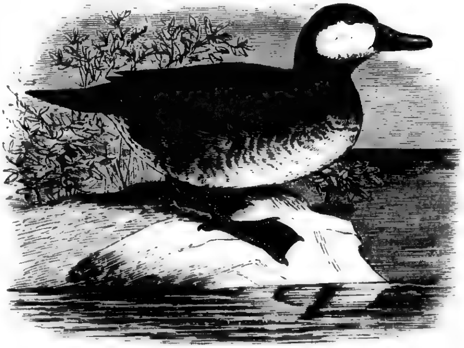
Dr. Cooper writes that although he was constantly on the lookout for Ducks of this species while on the southern coast of California, he never succeeded in finding one. If any do occur, he thinks that they must have come as stragglers from the coast of Asia.

Eggs of the Surf Duck obtained on the Arctic coast east of Anderson River by Mr. MacFarlane (Smithsonian Institution, No. 9566) are of a uniform ivory-white color, with a slight pinkish tinge, ranging from 2.25 to 2.30 inches in length, and averaging about 1.60 in breadth.

Genus **ERISMATURA**, Bonaparte.

Oxyura, Bonap. Synop. 1828, 390 (type, *Anas rubida*, Wils.); nec *Oxyurus*, Sw. 1827.
Erismatura, Bonap. Saggio Distr. Met. 1832, 143 (same type).
Gymnura, Nutt. Man. II. 1834, 426 (same type).
Undina, Gould, Birds Eur. V. 1836, pl. 383 (type, *Anas mersa*).
Cerconectes, Wagl. Isis, 1832, 282 (same type).
Bythonessa, Gloger, Handb. 1842, 472 (same type).

Char. Bill about as long as the head (much longer than the tarsus), very broad, widened toward the end, elevated at the base, the nostrils very small, and situated very near the culmen; maxillary unguis very small, narrow, and linear, the terminal half bent abruptly downward and backward, so as to be invisible from above; tail more than half as long as the wings, much gradu-



E. rubida.

ated, consisting of eighteen very stiff, narrow feathers, with the shafts strong and rigid, and grooved underneath, toward the base; the tail-coverts extremely short, scarcely covering the base of the tail; wings very short, and very concave beneath, the primaries scarcely or not at all extending beyond the tertials; tarsus very short, much less than one half as long as the longest toe.

In the characters defined above, all the known species which we have examined[1] agree strictly, with the exception of *Anas dominica*, LINN., which has usually been referred to this genus, but which differs radically in the character of the nail of the bill, this being broad and gradually curved, as in other Ducks. This difference is so great that *A. dominica* should undoubtedly be separated generically from the true *Erismaturæ*,[2] among which the only important deviation in structure is seen in *E. leucocephala*, of Europe, which has the base of the maxilla much swollen both vertically and laterally.

The two American species of *Erismatura* may be distinguished as follows: —

1. **E. rubida.** Bill, .90–.95 of an inch broad near the end. *Adult male:* Above, bright reddish ferruginous, including the whole neck, except upper part of the nape; pileum and upper part of the nape black; entire side of head, below the eyes, white; lower parts whitish (dark brownish gray beneath the surface, the breast tinged with buff). *Adult female* and *young male:* Above, grayish brown, finely mottled, and sometimes indistinctly barred, with grayish buff; pileum darker brown, finely mottled with reddish; rest of head grayish white, crossed longitudinally by a stripe of mottled brownish, from the rictus back over the auriculars, and parallel with the lower edge of the brown of the top of the head; neck pale brownish gray; lower parts as in the adult male. *Hab.* North America, south to Guatemala and West Indies.
2. **E. ferruginea.**[3] Bill, .70–.85 of an inch broad near end. *Adult male:* Head and neck, except lower half of the latter in front, uniform black; jugulum and upper parts deep ferruginous, as in *E. rubida;* lower parts as in *E. rubida*. *Adult female:* Similar to *E. rubida* but darker, and very distinctly barred on the sides and upper parts with fulvous-buff. *Hab.* Southern South America.

Erismatura rubida.

THE RUDDY DUCK; SPINE-TAILED DUCK.

Anas rubida, WILS. Am. Orn. VIII. 1814, 128, pl. 71, figs. 5, 6.
Fuligula (Gymnura) rubida, NUTT. Man. II. 1834, 426.
Fuligula rubida, SW. & RICH. F. B. A. II. 1831, 455. — AUD. Orn. Biog. IV. 1838, 326, pl. 343; Synop. 1839, 288; B. Am. VI. 1843, 324, pl. 399.
Erismatura rubida, BONAP. Comp. List, 1838, 59. — BAIRD, B. N. Am. 1858, 811; Cat. N. Am. B. 1859, no. 609. — COUES, Key, 1872, 295; Check List, 1873, no. 519, 2d ed. 1882, no. 741; Birds N. W. 1874, 583. — RIDGW. Nom. N. Am. B. 1881, no. 634.
Anas jamaicensis, ORD, ed. Wils. VIII. 1825, 138.

HAB. The whole of North America, breeding throughout its range, which extends south to Guatemala and New Grenada; Cuba.

SP. CHAR. *Adult male, full plumage:* Pileum and upper half of the nape uniform black; entire side of the head, below the eyes, including the malar region and chin, pure white; rest of neck, entire upper parts, sides, and flanks, rich chestnut-rufous or purplish-ferruginous; wing-coverts and middle of the rump dusky grayish brown, minutely mottled with paler; remiges dull brownish dusky; rectrices brownish black, the shafts deep black; lower parts white on the surface, but the concealed portion of all the feathers dark brownish gray, showing when the feathers are disarranged, and in midsummer specimens completely exposed by abrasion of the tips of the feathers; jugulum strongly washed with fulvous-buff, this sometimes invading the abdomen. Lower tail-coverts entirely white, to the roots of the feathers. "Bill and edges of the eyelids grayish blue; iris hazel; feet dull grayish blue, webs inclining to dusky; claws grayish brown" (AUDUBON). *Adult female:* Top of the head, down to below the eyes, and upper parts generally, dusky grayish brown, minutely freckled with pale grayish fulvous (more reddish on the head); remainder of the head dirty grayish white, crossed longitudinally by a stripe of speckled dusky, running from the rictus back across the auriculars, parallel with the lower edge of the brown of the top of the head; neck pale brownish gray, fading gradually into the white of the chin; lower parts, except sides and

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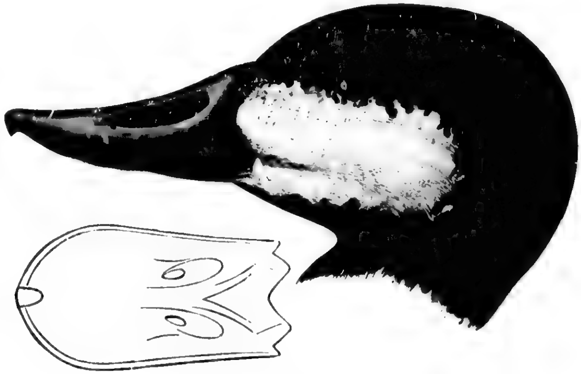
[1] *E. rubida* (WILS.), *E. ferruginea* (EYTON), of Chili, *E. australis* (GOULD), of Australia, and *E. leucocephala* (SCOP.), of Europe. There remains only *E. moccoa*, SMITH, of South Africa.

[2] For "*E.*" *dominica* we have already proposed the generic name *Nomonyx* (cf. Proc. U. S. Nat. Mus. II. March 27, 1880, p. 15).

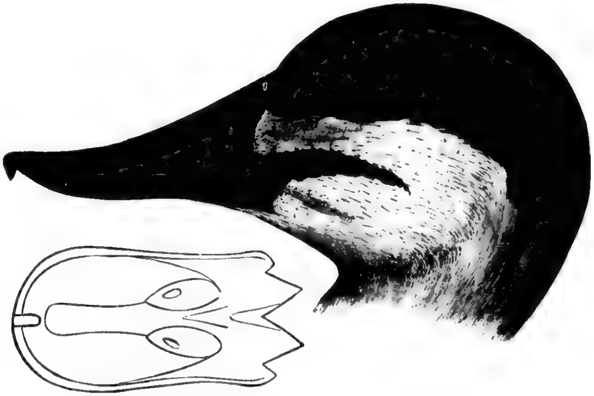
[3] ERISMATURA FERRUGINEA.

Erismatura ferruginea, EYTON, Monog. Anat. 1838, 170 (Chili). — GRAY & MITCH. Gen. B. I. 1844, pl. 169. — CASS. U. S. Astr. Exp. II. 1856, 204. — SCL. & SALV. P. Z. S. 1876, 404 (monographic); Nom. Neotr. 1873, 138.
Erismatura vittata, PHIL. & LANDB. Weigm. Archiv, 1860, 26 (Chili).

The Australian *E. australis* closely resembles the South American species, but is rather larger and deeper colored.



Male.



Female.

flanks (which are similar to the abdomen, but darker), as on the adult male. *Young:* Similar to the adult female. *Downy young:* Above, dark smoky brown, darker on the head; a whitish spot on each side the back; a brownish white stripe beneath the eye, from the bill to near the occiput; beneath this, a narrower dusky brown one, confluent with the brown of the nape, reaching almost or quite to the rictus. Lower parts grayish white, strongly shaded with sooty brown across the jugulum. [Described from a specimen obtained by Dr. E. Coues, U. S. A., at Turtle Mountain, Dakota, July 28, 1873.]

Although the collection of the National Museum contains numerous examples of this species, only a small proportion of them have the sex indicated, while on a still smaller number is the date noted. It is therefore difficult to determine satisfactorily, from the material at hand, the seasonal and sexual differences of plumage. Certain it is, however, that specimens in the plumage described above as that of the adult male in full plumage occur both in summer and winter. Audubon says that the "adult female in summer" "presents the same characters as in the male;" but although this may very likely be true, the series under examination affords no indication of it. He describes the "male one year old" as having "a similar white patch on the side of the head; upper part of head and hind neck dull blackish brown; throat and sides of neck grayish brown, lower part of neck dull reddish brown, waved with dusky; upper parts as in the adult, but of a duller tint; lower parts grayish white."

The Ruddy Duck is an exclusively American species, and, so far as I am aware, has never been met with, even as a straggler, in Europe. It is found throughout North America from high northern latitudes to Central America, and even the northern portion of South America, in all of which places it also undoubtedly breeds; though in the country intermediate between Guatemala and the Arctic Regions it is of rare occurrence.

Mr. Salvin states that it was the only resident Duck found by him on the Lake of Dueñas. Its numbers diminish during the period of the spring migration, the immature birds at that time seeking other quarters. He found this species more easily procurable than any other of the Ducks frequenting that lake, as a peculiarity in its powers of flight renders its escape less easy than it would otherwise be. This bird, namely, can fly as well as any other when it is once fairly started, but it rises with great difficulty from the water; and, in consequence of this, it can be approached within easy gunshot by sailing down upon it before the wind. Sometimes, however, this Duck seeks safety by diving; and when it does this, so rapid are its motions that it is almost certain to escape. Mr. Salvin found this species building its nest in May among the reeds on the margin of the lake, using for this purpose the stones and leaves of the dead flags, together with a little down. The eggs are like those of the European *Erismatura leucocephala,* and very rough in texture, although not quite as much so as the eggs of that species. He describes them as being of a dirty cream-white color, measuring 2.37 inches in length, and 1.83 in breadth. The eggs were sometimes rather more elongated than this, as some measured 2.56 by 1.77 inches. It was found by Dr. Kennerly in large flocks on a small lake, near Janos, Mexico, in April, and on the Petataro River.

Captain Blakiston mentions the occurrence of this species at York Factory on Hudson's Bay, and Mr. Ross met with it in the region of Great Slave Lake.

According to the observations of Sir John Richardson, it frequents the small lakes of the interior up to the 58th parallel. He speaks of it as being very unwilling to take to wing, but as diving remarkably well. In swimming it carries its tail erect, and, in consequence of the shortness of its neck, nearly as high as the head: this peculiarity causes the bird to appear as if it had two heads, and makes it very easy of recognition, even at a distance. Dr. Bryant found this species very common in winter in the Bahamas.

According to the observations of Dr. Cooper, it is present in all parts of California during the winter, both on fresh and on salt water. The young are very tame, and may readily be approached; but the adult bird is more shy, and full-plumaged specimens are not easily procured. Dr. Cooper met with a number of these Ducks at Santa Barbara, in a marshy pond, as late as the middle of May, and he thinks that probably a few remain to breed within the limits of that State, though their chief resort appears to be in regions farther north. This conjecture has since been verified, as I have in my cabinet a set of the eggs of this bird taken by Mr. William A. Cooper near Santa Cruz.

Colonel Grayson mentions meeting with this species at Tepic, in Western Mexico, and also at Mazatlan — where, however, it was rarely seen. Mr. Boardman speaks of its occurrence in the vicinity of Calais as occasional, both in the spring and in the fall; but he does not think that it remains there to breed.

It is frequently met with in Massachusetts, being much more common there in the fall than in the spring, especially on ponds of fresh water; and Mr. William Brewster informs me that he has shot as many as thirteen of these Ducks in a single morning. They arrive in quite large flocks of from thirty to forty, are very tame, and permit a boat to be rowed close up to them; and, as they rise very slowly from the water, they may be very readily shot.

Mr. Giraud found this species comparatively rare in the vicinity of New York; it is, however, quite common on Chesapeake Bay, where it is known to hunters as the Salt-water Teal. It is said to frequent the salt-ponds along the sea-coast, and to procure its food by diving, subsisting chiefly on marine plants. A writer in "Doughty's Cabinet" calls this species the Heavy-tailed Duck, and states that it arrives on the waters of the Upper Chesapeake Bay as early as the first or second week of October.

Mr. Nelson speaks of it as being very common in Northern Illinois during its migrations; it is a summer resident in that State, and occasionally breeds there. The spring migrations begin about the middle of April and continue until the 5th of May. A few of this species return early in October; but the main migration takes place a month later than that. Mr. T. H. Douglas, of Waukegan, is cited as having met with a pair of these birds, with eight or ten young, in a small lake near that place, and as saying that there is good reason to suppose the young had been hatched in the vicinity. Mr. Nelson several times started females while incubating: the nests, however, he was never able to find. These occurrences took place about the middle of June; and the circumstances were such as to leave no doubt that the birds were actually breeding in the neighborhood.

Mr. J. A. Allen met with this Duck in September in the valley of Great Salt Lake, where it was very common. It is also more or less abundant on the waters of most of the interior rivers and ponds.

Audubon noticed it in large numbers during the winter months in Florida, sometimes shooting upwards of forty in a single morning; and he was informed by Dr. Bachman that this species had been becoming more and more abundant in South Carolina; yet he had never met with an example in full summer plumage. This Duck seemed to be equally fond of salt, brackish, and fresh water. In the Southern States it congregates in great flocks. Its flight is rapid, with a whirring sound, occasioned by the concave form of the wings. It rises from the water with considerable difficulty, being obliged to assist itself with its broad webbed feet, and for that purpose to run on the surface for several yards. From the ground, however, it can spring up at once. This Duck swims with ease and grace and deeply immersed. It is also extremely expert at diving; and when wounded, often escapes by doing this, and then hiding in the grass, if there is any accessible. This bird is generally regarded as being excellent eating, as its food consists chiefly of the roots and leaves of plants found at the bottoms of ponds.

In Southern Wisconsin — as Professor Kumlien informs me — this species is a regular visitant in spring and in fall. It is not abundant, but is by no means rare. A few of these birds — mostly those whose plumage is immature — remain all summer about Lake Koskonong — where, however, this species is not known to breed; but I am assured by Mr. Goss that it does this — in limited numbers — in the neighborhood of Pewaukee.

This Duck was found breeding near Fort Resolution by Mr. Kennicott in June. It was taken in July, with its eggs, in the same neighborhood, by Mr. J. Lockhart; and also at Shoal Lake, in the summer of 1865, by Mr. Donald Gunn, who states that he has sometimes seen as many as twenty eggs in a single nest.

Eggs of this species from Guatemala and from Shoal Lake are in the Smithsonian Collection. The latter (No. 12727) — collected by Mr. Gunn — are of a dull white, with a slight shade of cream-color. They vary in their length from 2.35 to 2.55 inches, and in their breadth from 1.80 to 1.85. The specimen from Dueñas, obtained by Mr. Salvin (No. 13434), measures 2.55 by 1.85.

Genus **NOMONYX**, Ridgway.

Erismatura, Auct. nec Bonaparte.
Nomonyx, Ridgw. Proc. U. S. Nat. Mus. II. Mar. 27, 1880, p. 15 (type, *Anas dominica*, Linn.).

Char. Similar to *Erismatura*, but differing from all the species of that genus in the form of the maxillary unguis, which is similar to that of *Fulix* and allied genera, the same being in *Erismatura* the most peculiar and important generic character.

Altogether the most distinctive feature of the genus *Erismatura* consists in the remarkably peculiar conformation of the maxillary unguis, or nail of the upper mandible. This, viewed from above, is extremely small, narrow, and linear, the broader terminal half being bent very abruptly downward and backward, so as to be visible only from in front or below. With the sole exception of *Anas dominica*, Linn., all the species usually referred to this genus agree strictly with the type, *Anas leucocephala*, Scop., notwithstanding other characters are more or less variable. *Anas dominica*, Linn., has the nail of normal form, or very much like that prevailing among the Ducks generally, and on this account should be separated generically from *Erismatura*.

N. dominicus.

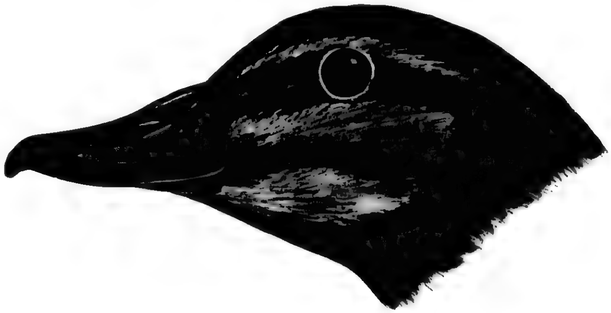
Nomonyx dominicus.

THE MASKED DUCK.

Anas querquedula dominicensis, BRISS. Orn. VI. 1760, 472 (St. Domingo).
Anas dominica, LINN. S. N. ed. 12, I. 1766, 201 (ex BRISS. l. c.).
Erismatura dominica, EYTON, Mon. Anat. 1838, 172. — BAIRD, B. N. Am. 1858, 925; ed. 1860, pl. 92; Cat. N. Am. B. 1859, no. 610. — COUES, Key, 1872, 295; Check List, 1873, no. 520; B. N. W. 1874, p. 583 (foot-note). — SCL. & SALV. P. Z. S. 1876, 405 (monographic).
Nomonyx dominicus, RIDGW. Proc. U. S. Nat. Mus. Vol. 2, 1880, 15; Nom. N. Am. B. 1881, no. 635. — COUES, Check List, 2d ed. 1882, no. 742.
Sarcelle, de la Guadeloupe, BUFF. Pl. Enl. 1770–1784, pl. 967 (female).
Anas spinosa, GMEL. S. N. I. ii. 1788, 522 (ex BUFF. l. c.).
Erismatura ortygoides, "HILL," GOSSE, Birds Jam. 1847, 406; Illustr. B. Jam. pl. 113.

HAB. Tropical America at large; accidental in Eastern North America (Wisconsin, KUMLIEN; Lake Champlain, CABOT).

SP. CHAR. *Adult male, in full plumage:* Neck all round, back, and sides dark cinnamon-brown, the two latter with the feathers streaked centrally, broadly, and conspicuously, with black. Lower parts yellowish rusty, the feathers occasionally showing their brownish centres. Entire fore part of the head, including the chin, cheeks, and pileum, black, the eye being about mid way between the bill and the posterior edge of the black; the occiput, however, like the neck. Wings brown, with a conspicuous white speculum on the greater coverts. Tail brown; lining of wings gray, the axillars white. Length, about 14.50 inches; wing, 5.75; tail, 4.25; culmen, 1.37; commissure, 1.60; tarsus, 1.10; middle toe and claw, 2.10.[1] *Adult male (in second year?)* (No. 42014, Spanish Town, Jamaica, April, 1866; W. T. MARCH): Pileum, two stripes along side of the head, and general color of the upper parts, black; spaces between the black stripes of the head, including cheeks and chin, dull white; neck and jugulum ferruginous, with a purplish-chestnut tinge; rest of lower parts dull ochraceous, stained with ferruginous, the feathers with concealed central dusky spot. Middle and greater wing-coverts, basal portion of lower secondaries, and axillars uniform pure white. Dorsal region transversely barred and bordered with ferruginous. "Bill black, under mandible fleshy; tail twenty-two feathers." Wing, 5.50 inches; tail, 3.90; culmen, 1.30; tarsus, 1.00; middle toe, 1.80. *Adult female* (Sumner, Wis., summer, 1870; T. KUMLIEN; Coll. Boston Society): Similar to the male, but black less deep and not so uniform, the ferruginous paler, or replaced by ochraceous and spotted with black; abdomen dull ochraceous-white; wing-speculum smaller. Wing, 5.50 inches; tail, 3.50; culmen, 1.30; tarsus, .90; middle toe, 1.75.



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[1] Described from the specimen obtained on Lake Champlain by Dr. Cabot, now in the Museum of the Boston Society of Natural History.

The markings of the head are the same in both sexes, the black stripes being duller, and the light ones approaching nearer to white in the female. The upper light stripe is a superciliary one, extending from the upper basal angle of the bill to the side of the occiput; the next is a suborbital one, beginning at the lower half of the basal outline of the maxilla, and extending back to a little farther than the upper stripe; this is bounded below by a dusky stripe of about equal width, beginning at the lower or basal angle of the maxilla, and reaching back as far as the light stripe.

Different individuals vary more or less in the shade of colors: the male from Lake Champlain, described above, is the most deeply colored specimen in the whole series. The Wisconsin specimen is exactly like one (No. 52856) from Tepic, Western Mexico; both are unlike Jamaican females, which differ from the male described merely in paler colors. An adult male from Tepic (No. 58818; A. J. GRAYSON) also differs from the Jamaican male in very noticeable points of coloration. The ferruginous borders to the feathers of the dorsal region are much broader and more regular, and the transverse bars of this color seen in the other specimen are entirely absent; the neck and jugulum are paler ferruginous than the back markings, instead of deeper; the lower parts are nearly white. The white speculum on the wing also appears to be much larger. It measures as follows: Wing, 5.10 inches; tail, 4.20; culmen, 1.35; tarsus, .90; middle toe, 1.90.

Should these differences hold good through a large series of specimens, the birds from the two regions would be separable as geographical races.

The *Nomonyx dominicus* is a West Indian and South American species, and accidental only in North America. Two instances are on record of the occurrence of this bird within the limits of the United States. The first was on the Vermont shore of Lake Champlain, where an adult male was obtained; the other took place several years afterward, in Jefferson Co., Wis. The specimen then taken was a female, and was procured by Mr. L. Kumlien, of Bussyville. We have no record of the circumstances attending the capture of either specimen.

This species is found in several of the West India Islands, and in the northeastern portions of South America. Professor A. Newton was confident that he met with this species in St. Croix; stating that in 1857 he found a large lagoon in that island, situated near its eastern end, frequented by a small flock of what he had no doubt were birds of this species. He first saw them on the 9th of March, sitting motionless on the water; and he again met with the same kind in May. On this occasion the birds were present in considerable numbers, swimming quite low, so that the hinder part of the back appeared to be beneath the surface. On the 15th of June he again had a good view of these Ducks; but did not succeed in procuring any specimens, by means of which he could make sure of their being of this species.

Léotaud mentions this Duck as being one of the birds of Trinidad, where it is by no means rare. While to a certain extent it seems to be migratory, some are always present on that island. It is social in its habits, and seems more disposed than any other Duck to keep to the water. Its flight is rapid, but is not so well sustained as that of most of the other kinds. When it is on the land it keeps in an upright position, its tail resting on the ground. Its movements on dry land are embarrassed by its claws, which are placed so far back as to disturb its equilibrium. Its flesh is excellent, and is held in high esteem in that island.

Mr. William B. Lee ("Ibis," April, 1873) mentions obtaining a single specimen on the banks of the Gato River, in the Argentine Republic. He found it a very expert diver, and watched its movements in a deep part of the river, in which it was diving, and where, on each occasion, it remained under the water for a long time.

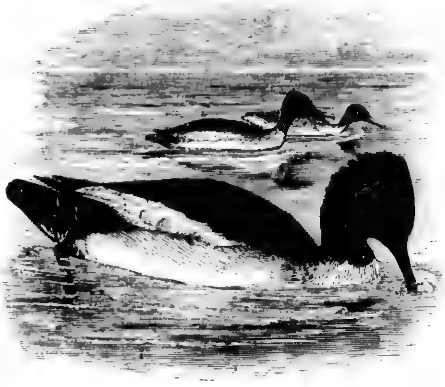
Colonel Grayson states that he met with a number of pairs of this species — about fifty in all — in Western Mexico, in the neighborhood of Tepic, where they were frequenting a small lake, or rather lagoon, as late as the month of June. They were evidently preparing to breed in that locality; and the females he shot were found to have enlarged ovaries. He did not, however, meet with any of this species in the neighborhood of Mazatlan.

The specimen procured in Wisconsin was taken on Rock River, November, 1870. Mr. L. Kumlien is confident that he has since met with one of these birds on Lake Koskonong; but he was not able to secure it.

GENUS **MERGUS**, LINNÆUS.

Mergus, LINN. S. N. ed. 10, I. 1758, 129; ed. 12, I. 1766, 207 (type, *Mergus merganser*, LINN.).

CHAR. Bill longer than the head, the breadth uniformly about equal to the depth, the serrations conical, acute, and pointed backward; crest occipital, pointed, or scarcely developed and depressed. Tarsus nearly three fourths the middle toe, with claw. Tail about half the length of the wings. Bill mostly reddish.



M. merganser.

The two North American species of this genus may be readily distinguished as follows, the females alone resembling one another: —

1. **M. merganser.** Nostril situated near the middle of the maxilla; frontal feathers extending farther forward than those on lateral base of bill. *Adult male:* Head and most of the neck greenish black; head scarcely crested; jugulum and other lower parts creamy white, or pale salmon-color. *Adult female:* Head and neck reddish (chin and throat white), the occiput with a full crest of lengthened feathers. Above, chiefly bluish gray.
   a. Merganser.[1] Black bases of the greater wing-coverts entirely concealed by the over-

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[1] MERGUS MERGANSER.
Mergus merganser, LINN. S. N. ed. 10, I. 1758, 129; ed. 12, I. 1766, 208. — NAUM. Vög. Deutschl. XII. 1844, 356, pl. 326.
Mergus rubricapilla, BRÜNN. Orn. Bor. 1764, 22.
Mergus castor, LINN. S. N. I. 1766, 209. — KEYS. & BLAS. Wirb. Eur. 88. — GRAY, Gen. B. III. 629; Cat. Brit. B. 1863, 208.
Merganser castor, BONAP. Comp. List, 1838, 59. — MACGILL. Man. II. 194.
Merganser Raii, LEACH, Syst. Cat. 1816, 36. — STEPH. Gen. Zool. XII. 1824, 161, pl. 53.
Mergus gulo, SCOP. Ann. I. N. H. 1769, 69.
Goosander, YARR. Brit. B. ed. 2, III. 395, fig.; ed. 3, III. 398, fig.
HAB. Palæarctic Region.

lying feathers. *Male:* Wing, 10.70–11.00 inches; culmen, 2.05–2.30; tarsus, 1.90–2.00; middle toe, 2.35–2.60. *Female:* Wing, 9.75–10.25 inches; culmen, 1.80–1.90; tarsus, 1.65–1.80; middle toe, 2.35. *Hab.* Palæarctic Region.

β. *Americanus.* Black bases of the greater wing-coverts exposed, so as to form a distinct bar about half way across the wing. *Male:* Wing, 10.50–11.25 inches; culmen, 1.90–2.20; tarsus, 1.90–2.00; middle toe, 2.40–2.50. *Female:* Wing, 9.60–9.75 inches; culmen, 1.80–2.00; tarsus, 1.85–1.90; middle toe, 2.25–2.40. *Hab.* North America.

2. **M. serrator.** Nostril situated near the base of the maxilla; feathers on lateral base of bill extending farther forward than those on the forehead. *Adult male:* Head dull greenish black, the occiput with a long pointed crest of narrow feathers; neck and sides of the jugulum dull buff, or light cinnamon, streaked with black; other lower parts mainly white. *Adult female:* Very similar in color to that of *M. merganser*, but distinguished by different position of the nostrils, and different outline of the feathering at base of the bill. Size also smaller. *Hab.* North America and Palæarctic Region.

Mergus merganser americanus.

THE BUFF-BREASTED SHELDRAKE.

Mergus merganser, Wils. Am. Orn. VIII. 1814, 68, pl. 68.—Sw. & Rich. F. B. A. II. 1831, 461.—Nutt. Man. II. 1834, 460.—Aud. Orn. Biog. IV. 1838, 261, pl. 331; Synop. 1839, 297; B. Am. VI. 1843, 387, pl. 411.—Coues, Key, 1872, 296; Check List, 1873, no. 521; 2d ed. 1882, no. 743; B. N. W. 1874, 583.

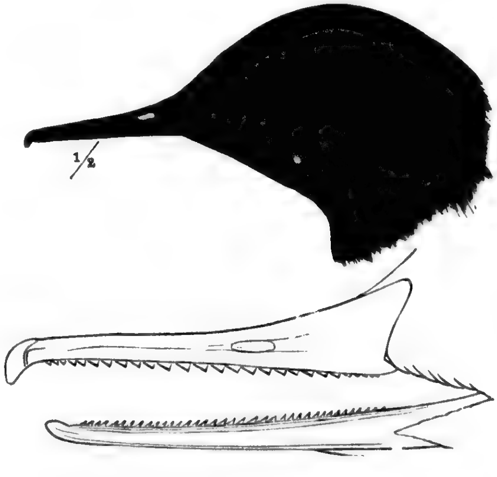
Mergus americanus, Cass. Pr. Ac. Nat. Sci. Philad. 1853, 187.—Baird, B. N. Am. 1858, 813; Cat. N. Am. B. 1859, no. 611.

Mergus castor, a. *americanus*, Bonap. Compt. Rend. XLIII, 1856, 652.

Mergus merganser americanus, Ridgw. Proc. U. S. Nat. Vol. 3, 1880, 205; Nom. N. Am. B. 1881, no. 636.

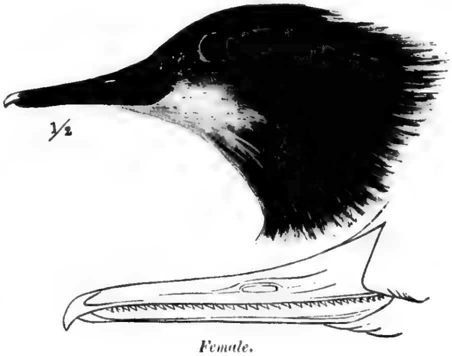
Hab. The whole of North America, breeding south to the Northern United States. No extralimital record except Bermudas.

Adult male: Head and upper half (or more) of the neck deep black, the elongated feathers of the pileum and nape distinctly, other portions faintly, glossed with greenish; whole back and inner scapulars, deep black; rump, upper tail-coverts, and tail, plain cinereous; sides of the crissum (anteriorly) and femoral region, whitish, narrowly barred with slate-color; primary-coverts, primaries, and outer secondaries, plain blackish dusky. Remainder of the plumage fine light salmon-buff in life, fading to buffy white in dried skins; inner secondaries narrowly skirted with black; base of the greater coverts deep black, forming a distinct bar about half way across the wing; anterior border of the wing dusky grayish, or blackish. Bill deep vermilion-red, the culmen and nail black; feet deep red; iris carmine. *Adult female:* Head and upper half of the neck reddish cinnamon, the pileum and occipital crest



Male.

(the latter much longer than in the male) more brown, the lores grayish ; chin, throat, and malar region, white; upper parts, sides, and flanks, bluish gray, the inner secondaries white, the exposed portion of the lower greater coverts white, tipped with dusky ; outer secondaries, primary coverts, and primaries, uniform slate-color. Lower parts, except laterally, pale creamy salmon-color, fading to nearly white in dried specimens, the feathers of the jugulum ash-gray beneath the surface. Bill, eyes, and feet, as in the male, but less brilliant in color.



Female.

Downy young :[1] Upper half of the head, with nape, reddish brown, more reddish on the nape, where encroaching on the sides of the neck ; remaining upper parts hair-brown or grayish umber, relieved by four white spots, one on the posterior border of each wing, and one on each side the rump ; lower parts white ; a stripe on the lower half of the lores, running back beneath the eye, white ; below this a narrower stripe of deep brown, from the rictus back to the auricular region ; a wide stripe, occupying the upper half of the lore, from the bill to the eye, blackish brown, this separated from the umber of the forehead by a very indistinct streak of brownish white or pale brown.

Adult male : Total length, about 27 inches, extent, 36 ; wing, 10.50–11.25 ; culmen, 1.90–2.20 ; tarsus, 1.90–2.00 ; middle toe, 2.40–2.50. *Adult female :* Total length, about 24 inches, extent, 34 ; wing, 9.60–9.75 ; culmen, 1.80–2.00 ; tarsus, 1.85–1.90 ; middle toe, 2.25–2.40.

We can perceive no difference of coloration between American and European specimens of this species, further than that adult males of the former have the black at the base of the greater wing-coverts exposed, so as to form a very distinct band about half way across the wing, while in those of the latter this black is entirely concealed by the overlying middle coverts. There is, however, a difference in the proportions of the bill in the two forms which may prove of specific importance. In the females, this difference in the bill is the only obvious distinguishing character.

The North American Goosander bears very close resemblance to the European form, and by most writers the two are regarded as being the same species. It is generally known in all parts of the country as the "Sheldrake," and is not infrequently confounded with the Red-breasted Merganser — from which it differs, however, in its larger size, as well as in certain peculiarities of its habits and distribution ; moreover, while the Red-breasted Merganser is a more maritime species, the Goosander prefers inland lakes and rivers.

The last-named species is found nearly throughout North America, breeding from about latitude 42° N. to the extreme points of the Fur Country, and in the winter months occurring throughout the continent.

Sir John Richardson describes this bird as making a nest of withered grass and feathers in the manner of Ducks in unfrequented places ; but in this he may have been misinformed, or may have confounded the *serrator* with this species. Or it may be true of Ducks that breed in regions where there are few hollow trees to nest in. This Duck is said to be one of the last of the *Anatidæ* to move south in the fall.

Mr. Hearne, in his Arctic journey, makes mention of the Goosander — which is usually called, on Hudson's Bay, the Sheldrake — and speaks of it as very common on the sea-coast and in the interior parts of the country, flying in very large flocks. He describes it as being an excellent diver, and as devouring fish in such great quantities that it is frequently obliged to disgorge several before it can rise from the water. It frequently swallows fish six or seven inches in length and proportionally thick. Birds of this species frequenting the interior parts of the Fur Country feed chiefly on crawfish, which are very numerous in some of the stony shallow rivers. In the fall of the year they became very fat, and though they feed principally upon fish, yet their flesh at that season is very good. They are said to remain in the Arctic Regions as long as the frost does not prevent their obtaining a subsistence.

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[1] Described from No. 5783, Bridger's Pass, Rocky Mountains, Aug. 13, 1856 ; W. S. Wood. Distinguishable with certainty from the young of *M. serrator* by the different position of the nostril.

Captain Blakiston mentions meeting with this species in the Saskatchewan Region, as far west as the Rocky Mountains. He also received specimens from Hudson's Bay.

The Goosander is found on the Pacific coast from Alaska to Southern California. It was taken at Sitka by Mr. Bischoff, and a single specimen was obtained at Fort Yukon by Mr. Lockhart; but it was not observed by any of Mr. Dall's party during their three years' explorations on the Yukon River and its vicinity. In his account of the birds of the Aleutian Islands, Mr. Dall states that several extremely fat examples of this species were killed, December 20, after a norther, in the outer bay, at Unalashka, — where, however, it seemed to be only an accidental visitor. It was not observed at the Shumagins, although reported as common in the winter near the Prybilof Islands.

Dr. Cooper obtained a female bird of this species at the highest encampment on the Little Black-foot River, where it had doubtless raised a brood, as this species is known to seek such clear rapid streams in the Cascade Mountains for breeding. *M. serrator* — the female of which so much resembles this species — is not known to occur so far from the coast.

Mr. J. A. Allen met with a pair of these birds on Mount Lincoln, in Colorado Territory; and he afterward, in September, found them very common in the valley of Great Salt Lake.

This Merganser has been found on the coast of Vancouver Island by Mr. R. Browne. According to Dr. Cooper, it is common in some parts of California, but not so abundant as in regions farther north, where it occurs along the sea-coast, in the bays, and in the larger rivers, from October to April. In all probability some individuals of this species remain to breed in that region along the mountain streams and upon the lakes, but none have been seen doing this.

Major Wedderburn states that this bird has been met with in the Bermudas. It occurs in large numbers in the neighborhood of Calais, where it is found throughout the summer months, as well as early in the spring and late in the fall. Mr. Boardman informs me that many of this species breed there, always resorting for that purpose to hollow trees, and that the nests are composed of dry and fine grasses, feathers, and down. In Massachusetts it is common in its vernal and autumnal migrations, and is then found almost exclusively in fresh water; a few of these birds being supposed to breed there.

This species — also known to the sportsmen of Long Island as the Sheldrake — arrives on the Long Island coast late in the fall, and continues its occupation of fishing until compelled to leave for a milder climate in search of food with others of its tribe. On its first appearance it is seen in large flocks; but it soon scatters, forming smaller parties of from five to twelve, and frequently associating with the Scaup Duck. It is said by Mr. Giraud to be decoyed without much difficulty. When wounded this bird dives so dexterously that only with the greatest difficulty can it be secured.

When badly wounded it has been known to dive to the bottom and cling to the grass. In the spring it again assembles in large flocks, preparatory to leaving for its summer residence. At that season it generally flies along the bottom land, at a short distance from the shore, and may be readily killed by hunters concealed in holes cut in the bank for that purpose.

The Merganser is very tenacious of life. Even when fairly shot down, if the lead has not reached a vital part, the next moment the bird will be gone. Giraud mentions a striking instance in which a young male Goosander had been shot, and picked up apparently lifeless, and then thrown into the bottom of a boat. There it remained apparently dead until he had sailed about two miles, when, to his great surprise, the bird flew off as if nothing had happened, leaving a pool of blood in the place where it had been lying. Although this species feeds almost exclusively on fish, yet in the fall of the year its flesh is quite tolerable; but in the spring it is oily, and has a rancid taste. In calm weather the Goosander has been known to collect in large parties for the purpose of diving for amusement. When thus engaged, at a given signal they all pass under the water, and some minutes elapse before any of them rise to the surface. In this way these birds will spend whole hours, apparently much delighted with the frolic. In overcast and in blustering weather they keep moving about all the day, and in heavy storms they shelter themselves in coves, and are occasionally seen steering up the small creeks to take refuge in the swamps.

Mr. Dresser met with this Goosander in Southwestern Texas in the winter, and three specimens were procured near Fort Stockton. Audubon also obtained birds of this species in Texas, in April, 1837. They are rarely, if ever, seen in South Carolina or Florida.

According to the observations of Messrs. G. A. Boardman, J. Elliot Cabot, and others, who have found this species breeding, it invariably nests in the hollows of trees. Audubon was either mistaken in his account of the nesting of this Merganser, or else he met with a very exceptional instance, since he describes it as nesting on the ground among rushes, in the manner of the *serrator*, having a large nest raised seven or eight inches above the surface.

Mr. Nuttall, in May, 1832, saw in the Susquehanna River, near Duntown, a female Merganser with a brood of eight young; but it required the utmost exertion on his part to overtake them. When the young, becoming fatigued, crowded round their parent, she took them on her back, and thus bore them along. The young Mergansers, though not larger than the egg of a Goose, were already elegant epitomes of the female parent, being generally gray, with rufous head and neck, and having the rudiments of a growing crest.

In Southern Wisconsin — as Professor Kumlien tells me — this species is quite common early in the spring and late in the fall, and on Rock River, wherever that stream is not closed by ice, it is found all the winter.

Dr. Kennerly mentions frequently observing this species at Boca Grande, in Chihuahua, and elsewhere along the Conalitos River, in large flocks. He found the birds exceedingly fat and heavy, but not at all palatable. One specimen when caught had in its throat several fish three or four inches in length.

The eggs of this species are of a buffy ivory white, usually from ten to twelve in number, and measure 2.55 inches in length by 1.75 in breadth.

Mergus serrator.

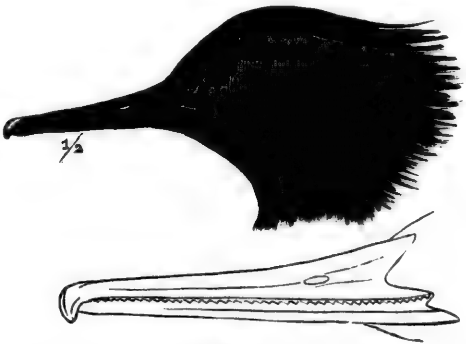
THE RED-BREASTED SHELDRAKE.

Mergus serrator, LINN. S. N. ed. 10, I. 1758, 129; ed. 12, I. 1766, 208. — WILS. Am. Orn. VIII. 1814, 81, pl. 69. — SW. & RICH. F. B. A. II. 1831, 462. — NUTT. Man. II. 1834, 463. — AUD. Orn. Biog. V. 1839, 92, pl. 401; Synop. 1839, 298; B. Am. VI. 1843, 395, pl. 412. — BAIRD, B. N. Am. 1858, 814; Cat. N. Am. B. 1859, no. 612. — COUES, Key, 1872, 296; Check List, 1873, no. 522; 2d ed. 1882, no. 744; B. N. W. 1874, 584. — RIDGW. Nom. N. Am. B. 1881, no. 637.
Mergus cristatus, BRÜNN. Orn. Bor. 1764, 23.
Mergus niger, GMEL. S. N. I. ii. 1788, 546.
Mergus leucomelas, GMEL. tom. cit.

HAB. Northern portion of northern hemisphere; in America migrating south, in winter, throughout the United States. No extralimital record.

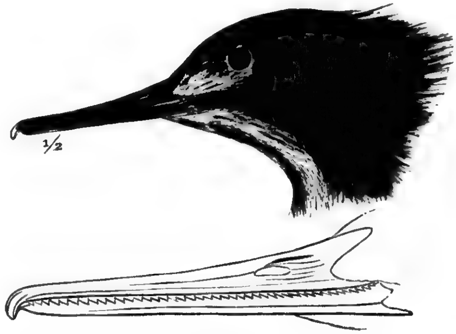
M. serrator.

SP. CHAR. *Adult male:* Head dull greenish black, duller and more brownish on the forehead and throat, the crest faintly glossed with purplish; neck and sides of the jugulum pale fawn-color or dull buff, indistinctly streaked with black, the streaks being on the edges of the feathers; a white collar round upper part of the neck, just below the black. Lower parts pure creamy white, the sides and flanks undulated with narrow zigzag bars of black. Back and scapulars uniform black; shoulders overhung by a tuft of broad feathers, broadly margined with black, the central space being white. Anterior and outer lesser wing-coverts dark slate-gray, darker centrally; posterior lesser coverts and middle coverts wholly white; greater coverts with the terminal half white, the basal half black, partly exposed, thus forming a narrow band or bar across the wing; two inner tertials wholly black, the rest white, edged with black; inner secondaries entirely white; outer secondaries, primary-coverts, and primaries black. Rump and upper tail-coverts dark ash-gray, with black shafts

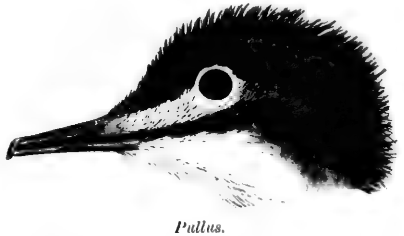


Male.

centrally, finely mottled laterally with white-and-black zigzags. Tail slate-gray, with black shafts. Bill deep carmine, the culmen black, the nail yellowish; iris carmine; feet bright red. *Adult female:* Head and neck cinnamon-brown, duller or more grayish on the pileum and nape, the crest shorter than in the male; throat and lower parts white, the sides and flanks ash-gray. Upper parts dark ash-gray, the feathers with darker shafts; exposed portion of greater coverts and secondaries white, the base of the latter black, but seldom showing as a narrow bar; primaries black. Bill, eyes, and feet as in the male, but less intense in color. *Young:* Similar to the adult female, but chin and throat pale reddish, instead of pure white, the lower part of the neck, and jugulum, brownish white, with the feathers mouse-gray beneath the surface; black at base of the secondaries exposed, forming a narrow bar between two white areas. *Downy young:* Above, hair-brown, the posterior border of each wing, and a large spot on each side of the rump, yellowish-white; lower parts, including the malar region, yellowish white; side of head and neck reddish cinnamon, paler on the lores, which are bordered above by a dusky stripe running back to the anterior angle of the eye, and below by a dark brown, rather indistinct, rictal stripe; lower eyelid white.



Female.



Pullus.

Total length, about 20.00 to 25.00 inches; extent, 32.00 to 35.00; wing, 8.60–9.00; culmen, 2.50; tarsus, 1.80–1.90; middle toe, 2.40.

The Red-breasted Merganser appears to be an inhabitant of the whole of the more northerly portions of the northern hemisphere. It is common to North America, Europe, and Asia. In the latter country it is found as far to the east as China and Japan.

This is far more marine than the larger species, and is principally, but not wholly, confined to the sea-coast, breeding as far south as latitude 45° north, and thence northward to an uncertain extent, varying with the conditions and peculiarities of the localities. It certainly breeds as far north as Alaska, on the Pacific, and Greenland, on the Atlantic coasts, as well as in Iceland and in other extremely northern latitudes.

This bird is included by Mr. Swinhoe in the fauna of Formosa, and is also given by him as having been found at Amoy, China. Temminck mentions it as occurring in Japan. It is given by Mr. T. L. Powys as not uncommon in winter in Epirus, Albania, and Corfu; and Mr. C. A. Wright ("Ibis," 1864) speaks of this as being a common species at Malta — as much rarer, however, in some years than in others. It arrives there in November, but is present in much larger numbers in December and January, immature birds being more abundant than adults. It is also said by Mr. H. Saunders to occur in Southern Spain in winter, especially on Lake Albufera.

It was met with on Nova Zembla by Von Heuglin; and was found, mingled with flocks of *Harelda glacialis* and *Œdemia nigra*, on Waigatsch Island. A male shot in the middle of September was changing its smaller plumage. This species is mentioned by Middendorff as occurring in the forest region of Siberia; and Mr. C. W. Shepard found it breeding on a small island in the Lake of Mý-vatn, in the northwestern part of Iceland; this islet was composed of broken lava, and was inhabited chiefly by this bird and the *Bucephala islandica*, with which it was living on the most familiar terms. Both of these birds were breeding in holes; and some of their nests were beyond his reach. In one instance a female of this species was found sitting on a nest in which there were four eggs of the Barrow Golden-eye — which eggs are very unlike those of this species.

This species breeds annually in various parts of the British Islands, but is far more abundant there in winter than in summer; preferring bogs and estuaries, but sometimes visiting rivers and inland waters. In some parts it is known as the "Saw-bill." It is indigenous in Ireland, nesting on islets both of marine and of fresh-water lakes. Mr. Selby found nests of this species upon Loch Awe, in Argyllshire. One nest was on a small wooded island, placed among thick brushwood, under the shelter of a projecting rock, and was surrounded with long grasses and ferns. It was carefully made of moss plucked from the adjoining rocks, mixed with the down of the parent bird, and in structure and materials resembled the nests of the Eider. It contained nine eggs of a rich fawn-color, measuring 2.50 by 1.75 inches. The female was remarkably tame, and remained sitting until nearly taken in a hand-net.

Mr. Hewitson, in his excursion to the west coast of Norway, found this species abundant on most of the lakes and rivers; and the eggs were laid under shelter, either on their margins, or in the interior of the numerous wooded islands. It breeds in the mountains of Lapland, as high up as the birch-trees grow.

The Red-breasted Merganser is given by Professor Reinhardt as one of the resident species of Greenland. It was found common on the Mackenzie River by Mr. Ross. It was met with by Mr. Murray on Hudson's Bay; and from that region specimens were also received by Captain Blakiston.

Mr. Kumlien says that this species is a regular, but not very common, breeder in Cumberland, beginning to nest about the first of July. On the Greenland coast it nests as far north as latitude 73°.

Mr. Dall received it from Sitka and Kadiak, through the agency of Mr. Bischoff; and also obtained a single specimen in May near Nulato, and several at St. Michael's in July. It was not a very common bird in any locality. On a small island in the Yukon, near its mouth, he found six nests of this species, all carefully concealed under dry leaves; most of them were under a log of driftwood in a small hollow, and were lined with down from the breast of the parent. The nests contained from six to ten eggs of a rich cream-color. The parents flew round and round the island, but out of range. Mr. MacFarlane found a few of this species breeding in the neighborhood of Fort Anderson and on the Lower Anderson River, in the wooded country. One of the nests obtained by him contained ten eggs.

This bird is very common about Eastport and Calais; and breeds both among the islands in the Bay and on the margins of the inland ponds. Its nest was hardly distinguishable from that of the Dusky Duck, and was placed on the ground, concealed under shelter of some projecting object — bank, rock, or branch. There were generally ten eggs; but the number varied from nine to twelve.

On Long Island, according to Giraud, this bird is known to the hunters as the Pied Sheldrake; it is not so abundant there as is the larger species. It feeds exclusively on fish, and its flesh is not esteemed as a delicacy.

Richardson appears to have confounded the habits of this species with those of the larger one; thus rendering it difficult to determine how far his account of either bird is correct. He states that the Merganser frequents the lakes and rivers in all parts of the Fur Countries, making its nest, in uninhabited places, of withered grass and feathers. It passes most of its time in the water, swimming with great rapidity, and with the body immersed. Upon the appearance of danger it immediately dives, and remains under the water for a long time. It flies rapidly, and for long distances; but moves on the land with great awkwardness and difficulty.

In California, according to Dr. Cooper, this bird is more abundant in the winter than the larger species, but has habits very similar to those of that bird. It is found as far south as San Diego. Dr. Cooper is of opinion that the female of this species may be seen in the Sierra Nevada in summer, and that it is then also common in the Rocky Mountains, as also in the Cascade Range. Possibly, however, the larger species is the one found in those localities; nevertheless Dr. Cooper may be correct, inasmuch as Captain Bendire has since found it common in Eastern Oregon.

It was seen breeding in considerable numbers in the neighborhood of Fort Anderson, on the borders of the wooded country, by Mr. MacFarlane. The nests were on the ground, near the edges of fresh-water lakes and ponds, under the shelter of fallen timber or of projecting banks, and were generally composed almost exclusively of down. A nest with six eggs was found July 4, the eggs containing partially developed embryos. The largest number seen in any one nest was eight. Mr. MacFarlane mentions that when descending Lockhart River in a canoe, in September, 1864, the party met with a small flock of this Merganser; the birds appeared to be occupied in hunting fish, and were found to be exceedingly fat and heavy. At first they suffered him to approach near enough for a shot; but when he missed his mark they would dive, and remain a considerable time under the water, and then appear a long way ahead or astern of the canoe. After being once missed, they became exceedingly shy and wary, and would dive while they were still too far off to be shot at with effect. They were very nearly as active, and as wary in the water, as is the Loon; but he managed to secure four specimens.

Mr. W. E. Barry, of Kennebunk, Me. ("Am. Nat.," II. 660), gives an interesting paper on the migratory movements of this species, from which we here present a few facts. Before the river has begun to open in spring this bird makes its appearance in the morning, but rarely before sunrise. It flies from the sea up the stream. Sometimes the birds file along one after the other; but more often preserve no regular order. When anything alarms them they sometimes croak. If attracted, they turn at a distance, retrace their flight, scale low over the water, throw out their webbed feet, and stop with a splash. They croak, dive with vigor, and return to the surface in a moment. No noise is heard from their wings, be their flight ever so rapid. The Mergansers seen on the breaking up of the ice are said to be as nothing in numbers compared with the quantity following a little later, when they come in flocks of from twelve to seventy-five, all going east. Most of the flocks in spring appeared to be made up of males. The females came later, and in large flocks. These birds are not only among the first to appear in the early spring, but also are among those which form the rear of the great migratory flight.

This species is of regular occurrence, both in spring and in fall, at Lake Koskonong, where, according to Professor Kumlien, it is not very common.

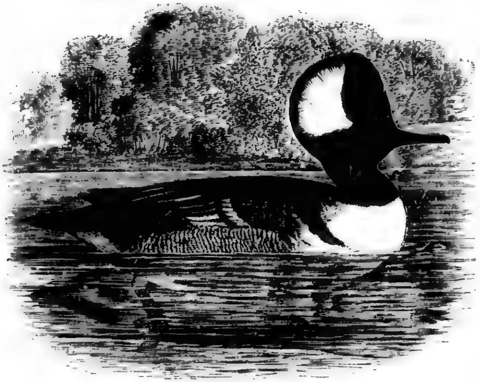
Mr. Dall met with it at Amchitka, lat. 51° 23′ north, long. 179° 12′ west — the only locality in the Aleutian Islands where it has yet been observed. It was rare there, was evidently only a summer visitor, and was apparently breeding.

Eggs of this species collected on Hudson's Bay by Mr. Drexler (Smithsonian Institution, No. 4350) vary from 2.45 to 2.50 inches in length, and from 1.75 to 1.80 in breadth, and are of a uniform pale-drab color. Mr. Dresser describes the color of this egg as being a dull stone-drab, or creamy buff, with a greenish-gray tinge, and as measuring from 2.55 inches by 1.75, and 2.55 by 1.85, to 2.75 by 1.80, and 2.65 by 1.70. The down with which the nest of this bird is lined is light gray, with a bluish tinge, the centres being white, and the tips grayish white. Mr. Dresser thinks none of this species remain to breed in New Brunswick; but in this he is certainly mistaken, as I have met with its nests in the more southern portions. It is probably more or less common in that province and in Nova Scotia.

GENUS **LOPHODYTES**, REICHENBACH.

Lophodytes, REICHENB. Syst. Av. 1852, p. ix. (type, *Mergus cucullatus*, LINN.).

CHAR. Bill shorter than the head, black; serrations compressed, low, short, inserted obliquely on the edge of the bill. Tail more than half as long as the wings. Tarsus about two thirds as long as the longest toe (with claw). Head with a full, semicircular, compressed crest of hair-like feathers.



L. cucullatus

The genus *Lophodytes* is quite distinct from *Mergus* in the possession of the above characters. The bill is also much more depressed terminally, and, in proportion to its length, deeper through the base. The nostrils are situated far back, as in *M. serrator*. But one species is known, unless the *Mergus octosetaceus* of Vieillot,[1] a South American bird (which we have not seen), be referable to this genus rather than to *Mergus*.

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[1] MERGUS OCTOSETACEUS.

Mergus octosetaceus, VIEILL. Nouv. Dict. XIV. 1817, 222. — SCL. & SALV. P. Z. S. 1876, 409 (monographic).

Mergus brasilianus, VIEILL. Gal. Ois. II. 1834, 209, pl. 283. — PELZ. Orn. Bras. 1870, 322. — SCL. & SALV. Nom. Neotr. 1873, 131.

Mergus fuscus, LICHT. Verz. Doubl. 1823, 85.

"*Mergus lophotes*, CUV. MS." (SCHLEGEL.)

Lophodytes cucullatus.

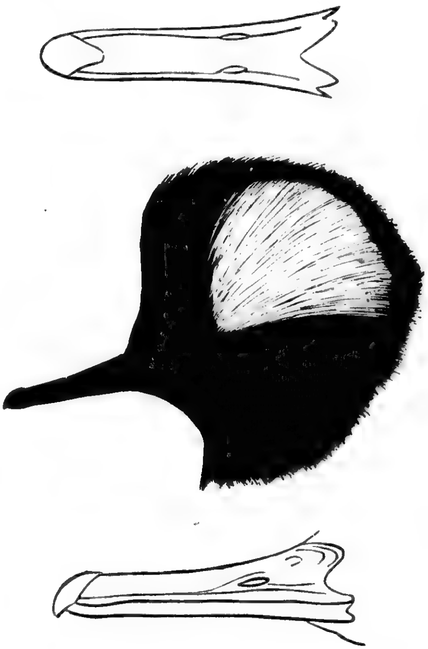
THE HOODED SHELDRAKE.

Mergus cucullatus, Linn. S. N. ed. 10, I. 1758, 129; ed. 12, I. 1766, 207. — Wils. Am. Orn. VIII. 1814, pl. lxix. fig. 1 — Sw. & Rich. F. B. A. II. 1831, 463. — Nutt. Man. II. 1834, 465. — Aud. Orn. Biog. III. 1835, 246, pl. 233; Synop. 1839, 299; B. Am. VI. 1843, 402, pl. 413. — Coues, Key, 1872, 296; Check List, 1873, no. 523; 2d ed. 1882, no. 745; B. N. W. 1874, 584.

Lophodytes cucullatus, Reichenb. Syst. Av. 1852, p. ix. — Baird, B. N. Am. 1858, 816; Cat. N. Am. B. 1859, no. 613. — Ridgw. Nom. N. Am. B. 1881, no. 638.

Hab. All of North America, south to Mexico and Cuba, north to Alaska, and accidentally to Greenland; breeds nearly throughout its range; Bermudas, in autumn; casual in Europe.

Sp. Char. *Adult male:* Head, neck, back, and scapulars black; crest chiefly pure white, but bordered by a distinct "rim" of black; forehead, and feathers round base of the bill, dark fuliginous, but this blending insensibly into the deep black. Wing-coverts dark gray, lighter and more ashy posteriorly; greater coverts broadly tipped with white, the base black, this exposed sufficiently to show a distinct band; inner secondaries with their exposed surface (in closed wing) white, the basal portion black, showing narrowly beyond the end of the greater coverts; tertials with a central stripe of white. Primaries, primary coverts, rump, upper tail-coverts, and tail brownish dusky. Sides of the breast crossed by two black crescents, projecting from the black of the back, these interdigitating with two white ones, the last crescent being black. Sides and flanks rusty cinnamon (more grayish anteriorly), narrowly undulated with black; remaining lower parts white, the posterior part of the crissum mottled with grayish brown. Bill deep black; iris bright yellow; legs and feet yellowish brown, the claws dusky. *Adult female:* Head, neck, jugulum, and upper parts generally, grayish brown, darker above, the crest reddish hair-brown, or dull cinnamon, smaller and of looser texture than in the male; chin, upper part of the throat, and lower parts, except sides, and posterior part of the crissum, white; middle feathers of the greater wing-coverts tipped with white; inner secondaries with their exposed surface white, except at the base. Maxilla black, edged with orange; mandible orange; iris hazel; feet dusky. *Young:* Similar to the adult female, but crest rudimentary, or wanting, the sides and posterior part of the crissum more distinctly brown. *Downy young:*[1] Above, deep hair-brown, darkest on the back and rump; posterior border of the arm-wing, a small spot on each side of the back (nearly concealed by the closed wing), and a larger one on each side of the rump grayish white. Lower half



Male.

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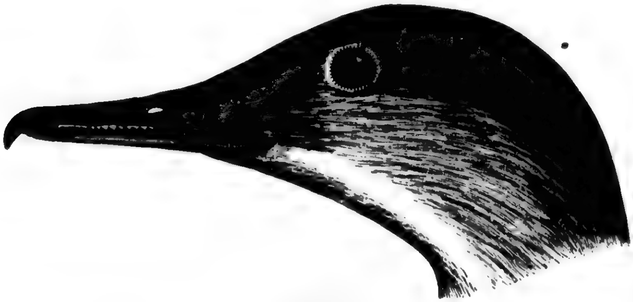
[1] Described from No. 12730, "Northwest Coast of America;" T. R. Peale.

of the head (from about on a line with the eye) brownish buff, paler on the chin and throat; jugulum light dingy brownish; remaining lower parts dingy white, the sides brown, like the upper parts.

Total length, about 17.50–19.00 inches; extent, 24.00–26.00; wing, 7.50–7.90; culmen, 1.50; tarsus, 1.25–1.30; middle toe, 1.90–1.95.



Young female.

The Hooded Merganser is an exclusively North American species, found nearly throughout the continent, from the Southern States, in which it spends the winter months, to the more northern portions of the wooded regions, where it breeds. It is found both on the Pacific and the Atlantic coasts, and is only a straggler in Europe, especially in Great Britain.

Mr. Dall states that it was not obtained by any of his party in Alaska, and believes that, if found at all in that region, it must be very rare. Mr. Bannister, however, thinks that he observed a large flock of this species in October, 1865, only a short time before the harbor at St. Michael's had become frozen over. He shot one of the birds; but having no boat, could not secure it. He did not notice this species at any other time. It was seen on Vancouver Island by Mr. R. Browne; and Dr. Cooper found it common, in winter, along the whole Pacific coast, and thinks that it very probably breeds within the limits of Washington Territory, as its unfledged young were found by Dr. Suckley on Puget Sound. This species appears to prefer clear fresh water in the forests and along mountain streams, where it can obtain plenty of young trout and insects.

It was found on the Mackenzie River by Mr. Ross, and on Hudson's Bay by Mr. Murray; and by Captain Blakiston. Sir John Richardson speaks of meeting with it in all parts of the Fur Countries, where he found it frequenting the lakes and rivers.

Major Wedderburn states that a single specimen of this bird was taken alive near Ireland Island, in Bermuda, in January, 1849, by a sailor; and Mr. Hurdis adds that another was shot in 1850.

It is found along the Atlantic coast, from the St. Lawrence to Florida. In winter it is especially abundant in the Carolinas; and during the breeding-season it is common in Northern Maine and in the provinces of New Brunswick and Nova Scotia. It is equally abundant in the forests of Oregon and Washington Territory, and is found, without doubt, throughout the interior in all suitable localities.

Mr. Dresser states that he noticed this species on the Nueces, Leona, and Medina rivers, although it was not very common in that region; and he thinks that it probably occurs on most of the larger streams of Texas.

It is found in the neighborhood of Calais, Me., where it spends the summer, and where it breeds in considerable numbers. Mr. George A. Boardman informs me that he has repeatedly noticed it breeding in the neighborhood of the St. Croix River, where it always nests in the hollows of trees, lining the cavity with fine dry grasses, leaves, and down; the eggs are from five to eight in number. Several years ago, Mr. Boardman's attention was called to a singular contest between a female Wood Duck and a female of the Hooded Merganser for the possession of a hollow tree. The two birds had been observed for several days contesting for the nest, neither permitting the other to remain in peaceful occupancy. The nest was found to contain eighteen fresh eggs, of which about a third belonged to the Merganser; and as the nest was lined with her own dark-colored down, it appeared probable that this bird was the rightful owner of the premises.

This species is quite common in the fall in Massachusetts. It comes in flocks, and is at times abundant. Mr. William Brewster informs me that he has shot several of these birds in each season, and that he has frequently seen as many as thirty or forty in a single flock. It is a difficult bird to shoot, as it is very shy, and flies rapidly. It is the swiftest in flight of the whole Duck family. On Long Island — according to Giraud — this bird is known as the "Water Pheasant," and also as the "Hairy-head;" but it is rather rare on that coast. It is a very active diver, subsists by fishing, and its flesh is not held in high esteem.

Audubon describes this species as being conspicuous for the activity of its motions and the rapidity of its flight, as well as for other habits which render it a pleasing object to the student of nature. On the waters of the Western and Southern States it is said to arrive from the north early in October, to be a most expert diver, and so vigilant that at times it escapes even from the best percussion gun. Even on wing it is not easily shot; and when wounded, it cannot be secured without the aid of a good dog. The young birds are carefully conveyed, one by one, to the water by the mother in her bill, who is thenceforth devoted in her attentions to the care and protection of her brood.

According to Audubon's observations, this species breeds in Kentucky, and also in Ohio and Indiana, and probably in other Western States. Dr. Bachman also found evidence of its breeding even as far south as South Carolina. He informed Audubon that on the 19th of April, 1838, he obtained an old female and her five young ones on the Santee River, the young being about three weeks old. As he approached them the female sank deep in the water, exhibiting only a small portion of her back above the surface, and swimming, with neck outstretched, close to the surface of the water. The young dived in various directions, in the manner of Grebes. On the following day Dr. Bachman met two other broods, each numbering five; and a cypress-tree was pointed out, in the hollow of which a pair had been breeding that season.

The Hooded Merganser is common during the spring and fall on the lakes and rivers of Southern Wisconsin, where, in the opinion of Professor Kumlien, some of this species undoubtedly remain and breed. He has never succeeded in finding their nests, but he has several times met with the young broods, and has shot a number of the birds when scarcely half grown.

The notes of Dr. Berlandier show that this species during the winter months inhabits the fresh-water marshes caused by the overflowing of the Rio Bravo del Norte near Matamoras.

Captain Bendire found this to be the most common of the three species of Merganser in Eastern Oregon. He could not ascertain positively whether it bred there, but had no doubt that it did so. It was seen in larger numbers on the lakes than on the small creeks, and was especially abundant during the season of its migrations. Two examples were taken in September, 1862, near Fort Resolution by Mr. J. Lockhart.

The eggs of this species are of a pure ivory-white, stained occasionally with a neutral tint, and are of a rounded oval, almost globular, form. They measure 2.05 inches by 1.70 (Smithsonian Institution, No. 15,560; RICKSECKER, Iowa); 2.15 inches by 1.75 (No. 8745; SAMUELS, Maine); 2.05 inches by 1.75 (No. 9785; BOARDMAN, New Brunswick).

NOTE. — The Smew (*Mergellus albellus*) has been attributed to North America by Wilson, Audubon, and Nuttall, but apparently upon erroneous data. In view, however, of the possibility of its occurrence in this country, it may not be amiss to give here the characters of the genus and species, with the principal synonymatic references: —

GENUS **MERGELLUS**, SELBY.

Mergellus, "SELBY, 1840," GRAY (type, *Mergus albellus*, LINN.).

CHAR. The peculiarities of the genus *Mergellus* consist in the very short bill (the culmen being shorter than the tarsus), which has the serrations much like those of *Lophodytes*, only finer and more numerous; the bill is very deep through the base, its greatest depth being equal to about half the length of the culmen; the nostril very large, broadly oval, and situated near the middle of the maxilla. The tarsus is about two thirds as long as the middle toe, with claw. The coloration and crest remind one strongly of *Lophodytes;* but the latter is smaller and less compressed, while there is much more white in the plumage.

Mergellus albellus.

THE SMEW.

Mergus albellus, LINN. S. N. ed. 10, I. 1758, 129; ed. 12, I. 1766, 209. — WILS. Am. Orn. VIII, 1814, 126, pl. 69. — BONAP. Obs. Wils. 1825, 250. — NUTTALL, Man. II. 1834, 467. — AUD. Orn. Biog. IV. 1838, 350, pl. 347 (♀ fig'd from specimen said to have been obtained at New Orleans; ♂, from a European skin); Synop. 1839; B. Am. VI. 1843, 408, pl. 414.

Mergellus albellus, SELBY, Brit. Orn. 1840. — BAIRD, B. N. Am. 1858, 817; Cat. N. Am. B. 1859, no. 614.

Mergus minutus, LINN. S. N. ed. 12, I. 1758, 129; ed. 12, I. 1766, 209 (= young).

Mergus albulus and *pannonicus*, SCOPOLI, Ann. I. Hist. Nat. 1769, 71, 72.

Mergus glacialis, BRÜNN. Orn. Bor. 1764, 24.

HAB. Palæarctic Region; accidental in Eastern North America ("New Orleans;" AUDUBON)?

Adult male: Prevailing color pure white. A patch covering the lores, and narrowly surrounding the eyes, deep black, with a greenish reflection; under portion of the crest glossy greenish black; back, rump, anterior and inner lesser wing-coverts, greater coverts, secondaries, two narrow bars across the side of the jugulum and breast (the posterior one strongly curved, in crescent form), deep black; upper tail-coverts and tail, ash-gray; tertials silvery gray; primaries blackish dusky; sides and flanks finely undulated with dark grayish. Bill and feet dusky (in skin), plumbeous in life; iris deep red. Wing, about 7.75 inches; culmen, 1.10; tarsus, 1.30; middle toe, 1.90. *Adult female:* Upper part of the head, including whole lores, reddish brown; rest of head, with neck (except nape), breast, abdomen, and crissum, pure white; upper parts generally, sides, and flanks, cinereous, darker on the back; wings much as in the male; jugulum tinged with pale cinereous. Size a little smaller than the male.

This species — known in Great Britain as the Smew, and as the *Harle Piette* in France — has small claim to a place in the fauna of North America. The only instance on record, so far as I am aware, of its occurrence, is the claim of Audubon to have obtained a single specimen, and that a female, on Lake Barataria, near New Orleans, in 1817. Wilson, indeed, speaks of it as being common on the coast of New

England, and in the ponds of New England and of New York. But he was misinformed; and probably mistook the common Buffle-head for this species. Its occurrence on any portion of the Atlantic coast, even in Greenland, has not the support of any well-attested evidence.

This species is exclusively migratory to Great Britain, and is there one of the most common species of its genus, frequenting the rivers and the larger sheets of fresh water, as well as most parts of the coast. The appearance of the adult male is said to be very striking; but it is the contrast rather than the variety of the colors of its plumage which makes it so. The immature birds — known as Red-headed Smews — are more common than the adults. The birds of this species are shy and vigilant, feeding on small fish, crustacea, and aquatic insects. These they obtain without difficulty, as they are excellent divers. They move on land awkwardly, owing to the backward position of their legs. They are not known to breed in Great Britain, but leave early in spring for localities farther to the northeast.

According to Mr. Dann, this bird is very common on the Elbe in winter, and is present in the Stockholm Fiord in November. It is not found on the west coast of Norway, in the Faröe Islands, in Iceland, or in Greenland, and it has not been observed by Arctic explorers in any part of the North American continent. During the winter months it is of occasional and irregular occurrence in Holland, Germany, France, and Switzerland, and has been met with even as far south as the Grecian Archipelago. It has also been obtained in Northwestern India and in Japan. The Zoological Society of London has received specimens of this bird from Trebizond.

Mr. John Wolley ("Ibis," 1859, p. 69) mentions procuring the eggs of this species in Lapland in 1853. It is there known by the name of *Ungilo*. It was said by the natives to breed in the cavities of trees, and also in nest-boxes prepared for its use. Although smaller than the Golden-eyed Duck, it is said to be able to turn that bird out of its hole, if desirous of taking possession. A nest of this bird was found by a native in an old hollow beech-tree, which, though greatly decayed, was still standing. It contained seven eggs in all. The female Smew was taken on the nest. The eggs were hardly distinguishable from those of the common European Widgeon (*Mareca penelope*), and were about the same size as the eggs of that bird, though rather below the average; but were a little more flattened at the smaller end, and had a little less of a yellowish tinge. There is said also to be a decided difference of texture. These eggs varied in length from 2.05 to 2.04 inches, and in breadth from 1.42 to 1.52. Mr. Wolley was informed by Hoffmansegg, a German naturalist, that the Smew occurs in his neighborhood, which is more southerly than the district where the former was staying; and as Mr. Wolley did not hear of it on the north or northeast coast of Norway, and as it is not known to breed in Sweden, he infers that it is an eastern as well as a northern bird.

The Smew is given by Middendorff as occurring in the wooded regions of Siberia.

Mr. Wheelwright says of this species: "It is never seen on the southwestern or eastern coast of Scandinavia, except in winter. It breeds sparingly in the far north, but the egg is more difficult to obtain than that of any other Scandinavian bird." The egg in his collection was taken out of a hole in a tree between Joakmock and Junàkiok, in Lulea, Lapland. The year before, a Golden-eye had bred in the same hole. The egg is so like that of *Mareca penelope* in shape, size, and coloring, that it is difficult to distinguish one from the other.

Mr. T. L. Powys found the Smew common in Epirus in February and March, chiefly in immature plumage. It was also found in Southern Spain during the winter by Mr. H. Saunders; and it was especially common at the Albufera.

ORDER STEGANOPODES.

THE TOTIPALMATE SWIMMERS.

CHAR. Hallux united by a web with the inner toe; bill longer than the head, with sharp cutting edges, and usually with a curved maxillary unguis or terminal hook (wanting in *Plotidæ* and *Phaëthontidæ*). Throat usually with a more or less distensible pouch of naked skin, situated between the mandibular rami (wanting in *Phaëthontidæ*).

Leaving out the genus *Phaëthon*, which, if truly belonging to this Order, is at least an aberrant form, the Steganopodes constitute a very natural group of birds, the main characters of which are as given above. So far as its external appearance goes, *Phaëthon* is very similar to the larger Terns, the most obvious difference being in the character of the feet.

Synopsis of the American Families of Steganopodes.

- **A.** Bill terminated by a conspicuous, strongly curved hook.
  - *a.* Tarsus excessively short, scarcely equal to the hallux, including its claw.
    - 1. **Fregatidæ.** Wings and tail excessively elongated, the latter deeply forked; middle toe much longer than the outer, its claw flattened and pectinated on the inner edge; webs very small, occupying less than half the space between the toes.
  - *b.* Tarsus moderately lengthened, much longer than the hallux, including its claw (nearly, sometimes more than, twice as long).
    - 2. **Pelecanidæ.** Bill excessively elongated (much longer than the tarsus and middle toe), greatly depressed, the gular pouch very large, and greatly distensible. Middle toe longer than the outer.
    - 3. **Phalacrocoracidæ.** Bill moderately elongated, or rather short (shorter than the middle toe), compressed; gular pouch small, scarcely distensible. Outer toe much longer than the middle.
- **B.** Bill tapering to the point, which is without a terminal hook or unguis (very faintly indicated in *Sulidæ*).
  - *a.* Nostrils obliterated; outer and middle toes nearly equal in length, and much longer than the inner; lores, orbital region, lower jaw, chin, and throat, naked.
    - 4. **Plotidæ.** Bill slender, heron-like, the outlines nearly straight (the culmen perfectly so); head very small, neck extremely long and slender. Tail long and fan-shaped (nearly as long as the wing), rounded, the feathers very broad, the middle rectrices transversely corrugated in the adult.
    - 5. **Sulidæ.** Bill very thick through the base, but tapering rapidly to the tip, which is very slightly curved, with the maxillary unguis faintly indicated. Tail short (about half the wing), cuneate, the feathers narrowed toward the end.
  - *b.* Nostrils distinct (as in the *Laridæ*); lateral toes nearly equal, and nearly as long as the middle; whole head normally feathered.
    - 6. **Phaëthontidæ.** Bill conical, much compressed, the culmen curved; maxillary tomium very concave. Tail short, graduated, the central pair of rectrices linear and excessively elongated.

FAMILY FREGATIDÆ. — THE FRIGATE PELICANS.

CHAR. Bill longer than the head, thick, but broader than deep, the culmen gently concave, and the terminal ungui strongly decurved; nostrils obliterated. Gular pouch naked, but rest of the head scantily feathered except on top, where densely clothed. Wings and tail excessively elongated, the latter deeply forked. Tarsi excessively abbreviated, wholly concealed by feathers; toes weak and slender, the middle much longer than the outer, which again greatly exceeds the inner; middle claw with its inner edge flattened and pectinated; webs occupying less than half the space between the toes.

A single genus only is known, which includes two closely allied species, or perhaps more properly, geographical races. They inhabit the sea-coasts of intertropical countries.

GENUS **FREGATA**, CUVIER.

Atagen, "MOERHING, Gen. Av. 1752."
Fregata, CUV. Leç. d'Anat. Comp. I. tabl. ii. 1799–1800.
Halieus, ILLIG. Prodr. 1811, 279.
Tachypetes, VIEILL. Analyse, 1816, 63 (type, *Pelecanus aquilus*, LINN.).

CHAR. Same as those of the family; see above.

F. aquila.

Fregata aquila.

THE FRIGATE PELICAN; MAN-O'-WAR HAWK.

Pelecanus aquilus, LINN. S. N. ed. 10, I. 1758, 133; ed. 12, I. 1766, 216.

Tachypetes aquilus, VIEILL. Gal. Ois. 1825, pl. 274. — BONAP. Consp. II. 1855, 166. — NUTT. Man. II. 1834, 491. — AUD. Orn. Biog. III. 1835, 495; V. 1839, 634; Synop. 1839, 307; B. Am. VII. 1844, 10, pl. 421. — LAWR. in Baird's B. N. Am. 1858, 873.

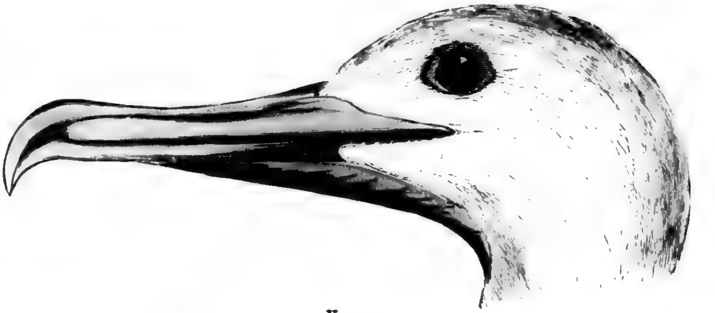
Tachypetes aquila, BAIRD, Cat. N. Am. B. 1859, no. 619. — COUES, Key, 1872, 306; Check List, 1873, no. 537; 2d ed. 1882, no. 761.

Attagen aquila, GRAY, Genera B. III. 1845.

Fregata aquila, REICH. Syst. Av. 1852, p. vi.

HAB. Coasts of tropical and subtropical America, north, casually, to Long Island, regularly to Florida, Texas, and California.

SP. CHAR. *Adult male:* Entirely black, the lanceolate feathers of the back and scapulars glossed with dull bottle-green and reddish purple. "Bill light purplish blue, white in the middle, the curved tips dusky; inside of mouth carmine; gular sac orange; bare space about the eye purplish blue; iris deep brown; feet light carmine above, orange beneath" (AUDUBON). *Adult female:* Dull black, the central area of the lesser wing-covert region light grayish brown; back and scapulars only faintly glossed, the feathers not lanceolate. Breast with a large white patch, extending downward along each side nearly or quite to the flanks, and upward on the sides of the jugulum (sometimes extending round the hind neck). "Iris dark brown; orbits and gular skin dark plumbeous, with a tinge of violaceus; feet carmine" (SUMICHRAST, MS.). *Young* (second year?): Upper parts as in the adult female. Head, neck, breast, and abdomen white. "Iris dull dark blue; bill horn-color, darker at base; legs and feet pale pinkish blue" (GREENE SMITH, MS.). *Nestling:* Covered with very fluffy white cottony down.



Young.

Total length, about 41 inches; wing, 22.00–27.10 (24.90); tail, 14.25–19.25 (17.73); culmen, 4.25–5.15 (4.62); longest toe, 1.95–2.20 (2.08). [Eleven specimens measured.]

Some specimens in the young (white-headed) plumage have the jugulum and foreneck strongly tinged with light cinnamon. The stage described above as the young seems not to be that of the youngest individuals, since two nestlings of the South Pacific race (*F. minor*) show quite well-developed scapular feathers which are uniform grayish brown.

The *F. minor*[1] differs, so far as we can see, only in smaller size, and seems to be merely a small race of the same species. Four adult examples in the National Museum measure as follows: Wing, 21.25–25.25 (22.56) inches; tail, 15.75–17.10 (16.27); culmen, 3.65–4.10 (3.90); longest toe, 1.65–2.10 (1.92).

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[1] FREGATA MINOR.

Pelecanus minor, GMEL. S. N. I. 1788, 572 (*Fregata minor*, BRISS. Orn. VI. 1760, 509, sp. 7).
Tachypetes minor, STREETS, Bull. U. S. Nat. Mus. no. 7, 1877, 25 (Christmas Islands).
Pelecanus Palmerstoni, GMEL. t. c. 573.
Attagen ariel, "GOULD," GRAY & MITCH. Genera of Birds, III. 1845, pl. 185. — GOULD, B. Austr. VII. 1848, t. 72.

The "Frigate-bird," "Frigate Pelican," and "Man-of-War's Bird," as this species is variously called, has a tropical habitat both on the Pacific and Atlantic shores of Southern North America, Mexico, Central and South America, and all the islands in both oceans between the parallels of 30° north and south. Beyond these limits it wanders occasionally; but its area of reproduction is chiefly limited to the region between the tropics.

Mr. Salvin met with this species both on the Pacific and on the Atlantic coast of Central America; and Mr. G. C. Taylor obtained its eggs, in 1858, in the Bay of Fonseca, on the Pacific coast of Honduras. The island which he visited was about an acre in extent; and its surface, which had an elevation of forty feet above the sea-level, was covered with long grass, scattered trees, and low shrubs, with a belt of mangroves growing at about high-water mark. This whole island was appropriated by the Frigate-birds; and nearly every tree and bush — both high and low — was covered with their nests, which were made by laying a few sticks crossways. Each nest contained a single egg, of a chalky whiteness, measuring 2.75 inches in length, by 1.35 in breadth. At the time of his visit — January 1 — some of the eggs were quite fresh, while others had been incubated for several days. Many of the nests were on the mangrove-bushes growing just above high-water mark. Some of the birds were sitting on their nests, and others were perched upon the branches. It was found nearly impossible to induce the birds to leave their nests. Shouting and throwing stones at them, discharging guns, and even poking them with the gun, had little effect; the birds merely snapped their bills in token of their indignation. Mr. G. C. Taylor subsequently found these birds very plentiful in Fonseca Bay, as also on the coast, in all parts of the western tropics. They have been said to fish in the same manner as the Pelicans; but according to his observations, instead of entering the water, they stop short on reaching its edge, and seize their prey with the beak, almost without causing the slightest ripple, ascending again with a heavy flapping of their long wings. In their flight and in their general appearance they resemble large Black Terns. They soar to an immense height, often appearing as mere specks in the sky.

Three different kinds of plumage were noticed; namely, the male, the female, and the immature dress. The males had a bright scarlet pouch, which the bird when on the wing inflates to the size of an ostrich egg.

Individuals of this species were observed by Professor Newton about St. Croix, soaring at a great height. It was a beautiful sight to watch one or more of these birds suspended in the sky above, with no perceptible motion of the wings. At one time the deeply forked tail was seen to be open; at another it was folded into a wedge-like shape; but the bird seemed to remain immovable. Before a gale they are said to fly quite low, and even to settle on the ground; and hence is derived the name "Hurricane Bird," which is one of the appellations by which they are commonly known in the West Indies, their appearance being regarded as a prognostic of bad weather.

Mr. E. C. Taylor, in his visit to the Windward Islands, repeatedly enjoyed opportunities of observing this species. He describes it as being very graceful, soaring high up in the air. He did not see it attack other birds, for the purpose of robbing them of their prey; but, on the other hand, he did see it plunging into the sea, as if fishing on its own account.

Mr. Salvin visited one of the breeding-places of this species, among some islands, on the coast of Honduras, called "Man-of-War Keys." On his approach the birds rose up in a cloud, and hung over the Key, like Rooks over a rookery. He describes their manner of hovering as being apparently unattended by any effort, and declares that no Eagle flies with the same ease as the Frigate-bird. He found this bird nesting on the highest mangroves on the island. Three fourths of the nests contained young of various ages, the youngest looking like puff-balls of pure white; while those which had just escaped from the shell were lying helpless on the frail structure of sticks composing the nests. These are so slightly built that the young, in their earliest infancy, must be in great peril. Where the eggs were still unhatched, the birds could hardly be driven from them. This reluctance on the part of such birds as build an open nest to leave their eggs exposed to the direct rays of a tropical sun, Mr. Salvin had previously noticed; but on cloudy day's the same solicitude is not manifested; and it always seemed to be in proportion to the age of the offspring, or the degree of development of the embryo.

The Frigate Pelican is a great wanderer, and has been met with on the southern coasts of Europe and on those of Africa. Mr. J. C. Melliss ("Ibis," 1870) states that this species is known formerly to have frequented the landing-steps at Jamestown, on the Island of St. Helena, and to have bred on a portion of the southwest coast of that island, at a locality known as the Man-of-War's Roost. It is now seldom met with in that region. Mr. E. L. Layard, in a letter to the "Ibis" (1871), also mentions that in his voyage to South Africa, while steaming from St. Helena to Ascension, a Frigate-bird paid great attention to the dog-vane of the foremast head, and succeeded in tearing away half the bunting. It being Sunday, the bird was not interfered with.

In the Atlantic this bird occasionally wanders to the Bermudas. Major Wedderburn mentions the occurrence of an individual there, Sept. 27, 1848. A large Frigate-bird had been observed soaring about in the dock-yard at Ireland Island, and it finally flew into one of the barrack-rooms of the Royal Artillery, thus making its escape for the time. But it was shot eventually; and three days later another was secured. This was when a strong easterly gale had been blowing for some time. Two other instances of its capture in Bermuda are on record.

This species also occurs, as an irregular visitor, on the Pacific coast, as far north as San Francisco. Dr. Cooper was informed of a single example shot at San Diego. It had entered the Bay, and alighted on the mast of an old hulk anchored there. He was also told by others that this bird is common at some seasons outside of the Bay. The skull of an individual of this species was obtained at the Farallones by Mr. Gruber.

Both Colonel Grayson and Mr. Bischoff met with the Frigate-bird off Mazatlan, in Western Mexico; and the former found it breeding in large numbers on the Island of Isabella. There was only one egg in each nest, and that was pure white, and nearly the size of that of the Common Goose.

Mr. Gosse visited a large roosting-place of this species near Bluefields, Jamaica. At most hours of the day the birds might be seen resting, in large numbers, on lofty trees, or else soaring and circling round and round over the place. In their size and color, in the graceful freedom of their motions, and in the sublimity of the elevation attained by them in their flight, they might be confounded with the Turkey Vulture, but for the curvature of their wings, their long-pointed tail, often opened and closed, and the superior elegance of their form. When about to alight, the Frigate-bird sometimes cackles; but it is generally silent. Mr. Gosse never saw it attack the Booby for the purpose of compelling this bird to disgorge; but the fishermen assured him that this often happened. Dr. Chamberlaine states positively that when the various sea-birds have secured their prey, by watching the drawing of the fishermen's nets, they are often pounced upon with violence by the Frigate-bird, and forced to yield their hard-earned booty to this formidable assailant, from whose rapacious attacks they would otherwise have been entirely unable to escape.

The egg of this species, according to Colonel Grayson, measures 2.87 inches in length by 2.00 in breadth, is of an elongate form, and has a thick smooth shell of a greenish-white color. The young are fed by regurgitation, but grow slowly, and do not leave their nests until able to fly. He describes this bird as being generally silent, the only note to which it gives utterance being a rough croak. It devours the young of the Brown Pelican when these are quite small, as well as the young of such other birds as have nests which are flat, when these are exposed by the absence of the parents. Audubon, however, questions the ability of the Frigate-bird to compel either the Pelican or the Booby to disgorge or drop its prey.

Dr. Bryant found a few birds of this species breeding at the Biminis (Bahamas). Their nests were placed upon the mangroves, amidst those of the Brown Pelican and the Florida Cormorant. On the central, and highest, part of Booby Key a colony of about two hundred pairs was breeding. The nests were on the bare rock, and closely grouped together; the whole not occupying a space more than forty feet square. There were no Boobies among them. The largest breeding-place visited by Dr. Bryant was on one of the Ragged Island Keys, having an area of six acres. The nests were on the tops of the prickly-pear, and were crowded very thickly together. By the 8th of April the young in half the nests were hatched, the largest being about one third grown. The other nests contained eggs more or less incubated, and out of many hundreds which were procured only seven were fresh. He speaks of the breeding-place as the most interesting he had ever visited. The birds covered the whole surface of the prickly-pears in thousands as they sat on their nests, or darkened the air as they hovered over them, and were so tame that they would hardly move when touched. On firing a gun the whole colony rose at once, and the noise made by their long and powerful wings was almost deafening. Incubation was carried on by both male and female. The young were fed at first by regurgitation. The food was principally obtained by robbing the Boobies; but why the latter, being by far the more powerful birds, should submit to this treatment, Dr. Bryant was unable to explain.

The young are at first nearly naked; later they are covered with a white down; and by the time they are of the size of a Pigeon they have the bronzed-black scapulars so developed that they look, while sitting on their nests, erect on their tarsi, as if they had on cloaks. He speaks of their eggs as being single, white in color, large for the size of the bird, and uniform in shape.

Eggs of this species in the Smithsonian Collection (No. 1711), collected in the Bahamas by Dr. Bryant and others (No. 15516), taken near Mazatlan, Mexico, by Colonel Grayson, are all of a uniform chalky white color, oval in shape, and of a nearly uniform size. They vary in length from 2.75 inches to 2.50, and in breadth from 1.80 to 1.70.

FAMILY PELECANIDÆ: THE PELICANS.

CHAR. Bill greatly elongated and excessively depressed, the terminal unguis very prominent and strongly hooked; gular pouch exceedingly large and greatly distensible; lores and orbital region — sometimes other parts of the head also — naked. Toes fully webbed, the outer almost as long as the middle, the inner much shorter. Tail very short, nearly even, or slightly rounded. Size usually very large.

The Pelicans include about ten species, which are found mostly in the warmer parts of the world, although two of them — the common American *P. erythrorhynchos* and the Palæarctic *P. crispus* — extend in summer to high northern latitudes. As may be seen from the synonymy of the genus *Pelecanus* as given below, these birds have been divided into several genera by authors; but each species possesses so many peculiarities of external structure that it is doubtful whether the differences between the supposed genera are of more than subgeneric importance.[1]

GENUS **PELECANUS**, LINNÆUS.

Pelecanus, LINN. S. N. ed. 10, I. 1758, 132; ed. 12, I. 1766, 215 (type, *P. onocrotalus*, LINN.).
Onocrotalus, BRISS. Orn. VI. 1760, 519 (type, *Pelecanus onocrotalus*, LINN.).
Cyrtopelicanus, REICH. Syst. Av. 1853, p. vii. (type, *Pelecanus erythrorhynchos*, GMEL.).
Leptopelicanus, REICH. l. c. (type, *Pelecanus fuscus*, LINN.).
Catoptropelicanus, REICH. l. c. (type, *Pelecanus conspicillatus*, TEMM.).

The characters of this genus having been sufficiently indicated above, it is unnecessary to repeat them here. It is quite likely that the genus as here used in a comprehensive sense should be subdivided, as indicated by the above synonymy.

The species of this genus which occur in North America may be thus distinguished: —

A. Lower jaw densely feathered to the base of the mandible. Tail-feathers, 24. (*Cyrtopelicanus.*)

1. **P. erythrorhynchos.** Color white, the primaries blackish. Bill and feet yellowish, deepening to red in the breeding-season. Wing, 22.00–25.25 inches; culmen, 11.30–13.85. *Hab.* North America generally, but rare along Atlantic coast; north in the interior to about 61°, south to Central America.

B. Lower jaw wholly naked. Tail-feathers, 22. (*Leptopelicanus.*)

2. **P. fuscus.** Prevailing color dusky, the upper parts silvery-striped in adults, grayish brown in the young; bill dull grayish, or purplish brown, stained with red toward end (in breeding-season); pouch greenish brown, grayish, or dusky. Wing, 19.00–21.00 inches: culmen, 9.40–12.20. *Hab.* Coasts of Gulf of Mexico and Caribbean Sea, including West Indies; Atlantic coast of South America?
3. **P. californicus.** Similar to *P. fuscus*, but larger, and with the pouch red in the breeding-season. Wing, 20.50–23.25 inches; culmen, 12.25–14.75. *Hab.* Coast of California, from San Francisco Bay to Cape St. Lucas. Pacific coast of Mexico and Central America?

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[1] For a more comprehensive review of the Pelicans, the reader is referred to the "Proceedings of the Zoological Society of London," 1868, p. 264, pls. 25, 26; 1869, p. 571, pl. 44; 1871, p. 631, pl. 51.

Pelecanus erythrorhynchos.

THE AMERICAN WHITE PELICAN.

Pelecanus erythrorhynchos, GMEL. S. N. I. ii. 1788, 571. — BAIRD, B. N. Am. 1858, 868; Cat. N. Am. B. 1859, no. 615. — ELLIOT, P. Z. S. 1869, 588 (monographic).

Pelecanus trachyrhynchos, LATH. Ind. Orn. II. 1790, 884 (based on Rough-billed Pelican, Synop. VI. 1790, 586). — COUES, Key, 1872, 300; Check List, 1873, no. 526; 2d ed. 1882, no. 748; B. N. W. 1874, 586 (synonomy).

Pelecanus onocrotalus ("A variety"), FORSTER, Philos. Trans. LXII. 1772, 419.

Pelecanus thagus (nec MOL.), STEPHENS, Gen. Zool. XIII. 1826, 117 (Mexico).

Pelecanus onocrotalus, BONAP. Synop. 1828, 400 (not of LINN.). — SW. & RICH. F. B. A. II. 1831, 472. — NUTT. Man. II. 1834, 471.

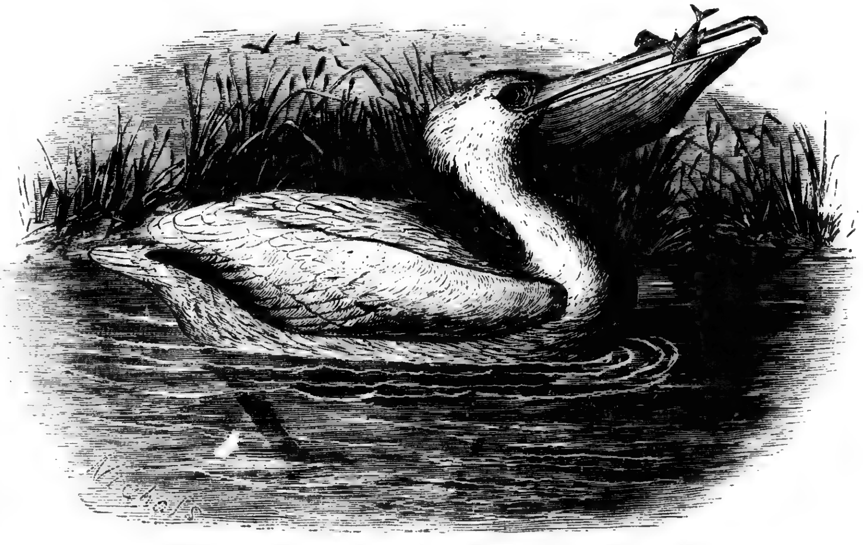
Pelecanus Hernandezii, WAGL. Isis, 1832, p. 1233 (Mexico).

Pelecanus americanus, AUD. Orn. Biog. IV. 1838, 88, pl. 311; Synop. 1839, 309; B. Am. VII. 1844, 20, pl. 422.

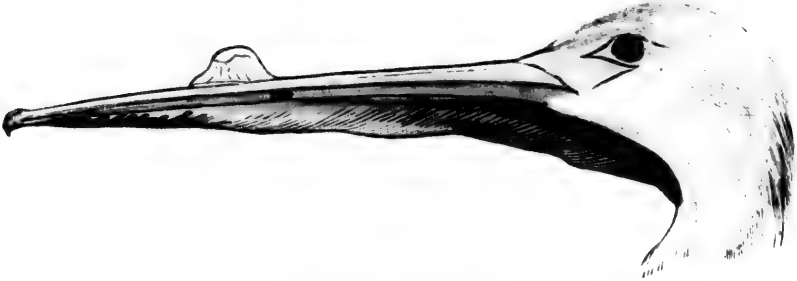
Pelecanus occipitalis, RIDGW. Am. Sportsman, IV. 1874, 297 (Nevada).

HAB. Temperate North America, north in the interior to about lat. 61°, south to Central America; rare or casual in the North Atlantic States, abundant in the Middle Province and along the Gulf coast.

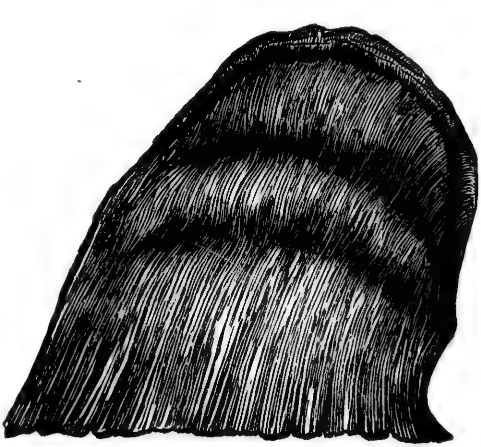
SP. CHAR. Tail-feathers, 24. Malar region completely feathered; color chiefly white; bill, pouch, and feet light-yellowish or reddish. *Adult, in full breeding-plumage:* Culmen with a narrow median horny excrescence, situated a little anterior to the middle of the culmen, the upper outline more or less convex, the fibres vertical, the size and exact shape variable. Plumage white, sometimes tinged with pale pinkish, the narrow lesser wing-coverts and jugular plumes straw yellow or (rarely) purplish buff; primaries dull black, their shafts white toward the base; secondaries dusky, edged both externally and internally with ashy-white. Upper part of the nape with a pendant crest of long, narrow, silky, pure white or pale straw-colored feathers.



P. erythrorhynchos.



P. erythrorhynchos, breeding-dress.



A maxillary crest of rather exceptional regularity.

Bill chiefly orange, paler on the culmen, the nails and edges of the maxilla and mandible more reddish; mandible deeper red than the maxilla, growing almost brick-red basally; pouch dirty-whitish anteriorly, where suffused with blackish, passing successively through yellow and orange into intense dragon's-blood, or brick-red, at the base; lower edge of the mandible sometimes blackish, and side of the mandible sometimes marked, nearly opposite the maxillary crest, with a somewhat quadrate black spot; bare skin of the lores and orbital region rich orange-yellow; eyelids dark-reddish; iris pearl-white; legs and feet intense orange-red.[1] *Adult, during latter part of the breeding-season:* Similar to the above, but maxillary excrescence wanting (having been cast), and the nuchal crest replaced by a patch of brownish gray. *Adult, in fall and winter:* Similar to the last, but no grayish patch on the occiput (crest also absent), the bill and feet clear yellow. *Young:* Similar to the winter adult, but lesser wing-coverts brownish gray centrally, the pileum similarly marked; jugular feathers short and broad, and pure white, like the other feathers of the lower surface; bill, pouch, and feet pale yellow.

Total length, about 62.00 inches; extent, 8.50–9.00 feet; wing, 22.25–25.25 inches; culmen, 11.30–13.85; tarsus, 4.30–4.65; middle toe, 3.70–4.25.[2] Weight of adult, about 17 pounds.

Individual variation, both in size and in the details of coloration, is very considerable in this species. Most descriptions of the perfectly adult bird say that the plumage is tinged with peach-blossom pink; but in only a single example among the very large number examined by us (including both skins and freshly killed birds) was the faintest trace of this color visible, and that confined to a few feathers of the back. The straw-yellow color of the narrow jugular feathers and lesser wing-coverts, however, seems to be always a characteristic of the adult birds, both in winter and summer, though much paler in the former season. The black along the lower edge of the mandible and the squarish spot on its side are not infrequently entirely absent. The maxillary excrescence varies greatly both in size and shape. Frequently it consists of a single piece, nearly as high as long, its vertical outlines almost parallel, and the upper outline quite regularly convex, the largest specimen seen being about three inches high, by as many in length. More frequently, however, it is very irregular in shape, usually less elevated, and not infrequently with ragged anterior, or even posterior, continuations. This excrescence, which is assumed gradually in the spring, reaches its perfect development in the pairing season, and is dropped before or soon after the young are hatched; simultaneously with the shedding of this appendage the nuchal crest falls off, and in its place a patch of short brownish gray feathers appears; this disappears with the fall moult, when the occiput is entirely unadorned, there being neither crest nor colored patch.

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[1] Taken from specimens freshly killed, in May, at Pyramid Lake, Nevada: the iris is said to be sometimes hazel.

[2] The average of a series of eight adult examples is as follows: Wing, 23.55 inches; culmen, 12.62; tarsus, 4.50; middle toe, 3.98.

The American White Pelican occurs nearly throughout North America, from Panama to the more extreme northern regions. Although found in large numbers in the Fur Country, as well as in the region beyond the Rocky Mountains, it is quite rare on the eastern coast, as well as in the interior between the Atlantic and the Rocky Mountains. Only a few stragglers are met with — and that irregularly and by accident — except on the Ohio and the Mississippi, where their visits, though irregular, are more frequent.

Captain Blakiston met with this species on the Saskatchewan, and Mr. Murray reports having received one specimen from the Hudson's Bay Region. The former states that the Grand Rapid, at the mouth of the Saskatchewan, is a favorite resort. Mr. Bernard Ross also found it frequenting the Mackenzie River.

Hearne ("Journey to the Northern Ocean," p. 433) speaks of this species as being numerous in the interior part of the country, but never appearing near the sea-coast. It is said generally to frequent large lakes, and always to make its nest on islands. These birds are so provident for their young that great quantities of fish lie rotting near their nests, and emit such a stench as to be noticed at a considerable distance. The young are frequently eaten by the Indians; and great quantities of their fat are melted down and preserved in bladders for winter use, to be mixed with pounded flesh; but this in time becomes very rank. The skin of this bird, which is thick and tough, is frequently dressed by the Indians, and converted into bags, but never into clothing.

This species is mentioned by Sir John Richardson as being numerous in the interior of the Fur Country, up to lat. 61°; but he says that it seldom comes within two hundred miles of Hudson's Bay. It usually deposits its eggs on small rocky islands on the brink of cascades, where it is almost entirely secure from approach; but otherwise it is by no means shy. It flies low and heavily, usually in flocks of from six to fourteen, sometimes abreast, at other times in an oblique line. It is often known to pass close over a building, or within a few yards of a party of men, without exhibiting any signs of fear. It haunts eddies under waterfalls, and devours great quantities of fish. When gorged with food it dozes on the water, and may then be easily captured, as it takes wing at such times only with great difficulty. It may be most generally seen either on the wing or swimming.

There are quite a number of well-attested instances of the occurrence of this species in different parts of the Provinces, of New England, and of the interior of New York. W. J. Beal ("Naturalist," I. 323) states that in the spring of 1874 a pair of these birds visited the marshes of Cayuga Lake, one of which — a female — was killed. The hunters had never seen anything of the kind about there before. In the stomach were found two of the common *Pomotis* and the remains of two Bull-heads, that must have been ten inches long; but no small fish. Two specimens were seen about ten years ago in the Bay of Fundy, near St. John. One was killed, mounted, and placed in the collection of that city. A flock of seven is reported as having been seen in the St. Croix River in August, 1874, by Captain Worcester, of St. Stephens, N. B. Mr. J. A. Allen informs me that thirteen White Pelicans were seen a few years ago on Nantucket, near Brant Point Lighthouse, one of them having been killed; and Mr. Maynard states that about the same time several of these birds were seen near Ipswich, Mass. This species is now of irregular appearance on the New England coast, although it is said to have been formerly not uncommon.

Henry Gillman, of Detroit, records ("Naturalist," X. 758) the capture, June 15, 1870, of a remarkably fine specimen which was shot in a marsh near Sarnia, Ontario, by Captain Oliver Maisonville. It was a male of unusually large size, weighing thirty-three pounds. It had been very active, wandering over the marsh all day, swimming about, or only rising for a short flight, and then alighting again in the water. No fish were found in its pouch, and only a few small worms and insects in its stomach.

Dr. Cooper speaks of this species as being common on the coast of California in winter, though few reach San Diego. It was found in the Gulf of California; and on the 5th of April, 1861, he saw a large flock of two hundred or more passing northward over Fort Mojave, the motion of their wings sounding like the rush of a meteor through the air. They stopped, and circled around the fort, their white plumage glistening in the sunshine, all moving simultaneously, as if under military orders, and occasionally uttering a croaking sound; then forming a wedge-shaped column, with skirmishers on their flanks, they moved on toward the north, flapping and sailing alternately, and as uniformly as if by word of command. When at Lake Tahoe, over six thousand feet above the level of the sea, Sept. 12, 1863, Dr. Cooper saw a flock of these birds, apparently a mile above the lake, flying directly on an air-line course from Great Salt Lake to San Francisco, showing that their residence in the interior lasts about five months, although it may probably continue longer when their fishing resorts are not frozen over. He did not notice this bird at Lake Tahoe, although Dr. Newberry mentions having seen one in summer at Klamath Lake. On Sept. 12, 1865, Dr. Cooper found immense flocks of this species in the lagoons along the coast, twenty-six miles south of Stockton. They arose from their resting-places among the groves with a sound like that of the distant surf, and circled about in a majestic manner, performing various evolutions in the air with the accuracy of a regiment moving under command. The attraction at that season was the low state of the waters, which afforded them an opportunity of obtaining an abundance of the cyprinoids inhabiting those lagoons.

Colonel Grayson mentions this Pelican as being occasionally seen in large flocks on Rio Mazatlan, in Western Mexico; but it is not resident there, being seen only in the winter months, and not remaining long in that locality.

According to Mr. Salvin, this bird was obtained by Mr. Skinner on the Pacific coast of Guatemala. Mr. Salvin afterward himself visited the west coast of Central America, where he found the lagoons frequented by large flocks of White Pelicans. When first seen they were feeding in the lagoon, and he tried in vain to obtain a specimen. He noticed that this bird soars much more than the Brown species; and he frequently observed it doing this after the manner of the Vulture, and mounting in gyrations until almost out of sight. After a while, gradually descending, it would fly off to a lagoon to feed. He estimates that there must have been nearly a thousand individuals in the flock which he saw; and the noise they made by dashing into the water while feeding, could be heard to a great distance. They never flew more than twenty or thirty yards in pursuit of fish. When they all plunged into the water together, it would be lashed into foam. After several disappointments, Mr. Salvin managed to secure some specimens of this Pelican by getting into a canoe with some fishermen, and gradually approaching them.

Mr. Charles H. Nauman informs me that he found birds of this species breeding abundantly on the sandbars opposite to New Found Harbor, in Indian River, Florida. They laid their eggs about the middle of May, on the bare sand, making no nest whatever. Audubon did not meet with any of their eggs in Florida, but states that about 1810 they were frequently seen on the sandbars of the Ohio. In April, 1837, he met with the White Pelican in great abundance near the southwest mouth of the Mississippi; and afterward, in the course of the same season, he saw it in almost every inlet, bay, or river in Texas.

Mr. Peale mentions procuring specimens of this Pelican at Council Bluff as early as April 8. He also records the killing of a pair of birds of this species on the Delaware, a few miles below Philadelphia. On the western rivers this species has been observed as high as lat. 42°. Mr. Peale found it in company with *P. fuscus*, breeding in vast numbers on the Mangrove Islands, in Mosquito River, East Florida. He visited these islands in the winter. The birds collected there at night, although it was not their breeding-season. They gathered there to roost, apparently coming from a great distance. The inhabitants of the surrounding country collected the young in great numbers, in June, for the sake of their oil, which is said to burn freely and to emit a clear light.

The great peculiarity of the Pelicans, as a family, consist in their possession of a pouch attached to the lower mandible, which they have the power of contracting, when empty, into a small compass, so that it hardly hangs below the bill, though when fully expanded it is of great size. This pouch serves all the purposes of a crop, and also enables the bird to retain its food unaltered for a considerable time. The food as fast as collected is stowed away in the pouch; and when the bird returns to the shore it devours at its leisure that which has thus been laid aside for future use. From the same receptacle, also, the female feeds her young. The membrane of this pouch may be prepared so as to be of silky softness, and is made into work-bags, purses, tobacco-pouches, and shot-bags.

This species flies well, and can remain on the wing for a long time. It swims and dives with great celerity. The young are fed with fish that have been for some time macerated in the pouch of the mother. The Pelican can be easily tamed, and trained to fish for its owner. According to Faber, a Pelican (*P. onocrotalus*) in the collection of the King of Bavaria was kept over forty years, and showed evidences of great sagacity. Other instances are also on record of birds of this family attaining a wonderful longevity.

Mr. Ridgway met with the White Pelican on the Truckee River, about fifteen miles above Pyramid Lake. At first only a few of these birds were seen. In August he accompanied a small party to explore the lake, and visit the abode of the Pelicans upon the islands therein. The number increased as the party descended the river, and many were seen as they reached the open sheet of water. They were very unsuspicious, and took little notice of the approach of the party. When at last he reached the lake, and encamped about three quarters of a mile from the mouth of the Truckee, thousands of Pelicans could be seen scattered over the surface of the lake. In the morning, at sunrise, lines of these birds in hundreds could be observed flying from the island to their feeding-grounds at the mouth of the river, in single lines, one behind the other; their manner of flight being a succession of slow, regular flappings of the wings, which at intervals are extended to their full length, the birds sailing thus for a few rods, and the flapping being then resumed. The flock preserves the utmost method and order in its flight. The leader is always the first to extend or flap his wings, and is followed in these movements by each one in the line in succession. Occasionally individuals break the ranks, and alight upon the water, where they often remain for hours.

Mr. Ridgway visited the island at midnight when there was a bright moonlight. The arrival of the party startled the thousands of Pelicans slumbering on the beach, and they all flew away, making, as they rose, a great and confused noise with their wings. When he landed, all the birds had gone, except a few old or sick ones; but they were plainly seen, like a floating mass, some distance out upon the water. As the party moved away, the birds began to swim slowly toward the beach. Their roosting-place was very offensive, and the party was obliged to spread their blankets at some distance from it. In the morning the shore was covered with a dense mass of these birds, who at first scarcely noticed the intruders; but as these approached, the Pelicans pushed one another awkwardly into the water, or rose heavily from the ground and flew out into the lake. Of the thousands of birds seen at that time not one was found possessed of the horny appendage to the upper mandible, so characteristic of this species at certain seasons. On Mr. Ridgway's visit to the lake in December not one of these Pelicans was to be found; all had migrated. About the 20th of March immense flocks were seen returning, and moving in the direction of the lake, but deviating from a regular course, as if uncertain of their way.

In May the lake was again visited, and the Pelicans found to be in as great abundance as before, more active, flying up and down the river quite near the ground, by pairs, in small companies, or singly. Many were easily distinguished by their conspicuous process, known as their "centre-board," the others having already lost these appendages. At this time both sexes were very highly colored, the naked skin of the face and feet being fiery orange-red instead of pale straw-yellow, as in August. On his first visit to the island all the eggs had been destroyed by the Gulls (*L. californicus*), which were breeding in immense numbers on another portion of the island. Returning a few days later, he found one corner of the island covered with a dense body of Pelicans. The place where they had been was covered with their nests, upon which the females had been sitting, the males standing beside them. Each nest was merely a heap of earth and gravel raked into a pile about six or eight inches high, and about twenty inches broad on the top, which was only very slightly hollowed. In no instance was there more than one egg in a nest; but Mr. Ridgway was informed that the usual number is two, and that three are not infrequently present. The Pelicans had evidently laid twice before during the season, and each time upon a different part of the island, as there were two other areas — each of an acre or more — covered by their nests and strewn with fragments of eggs destroyed by the Gulls. Soon after his arrival he found that the number of birds possessing the "centre-boards" began daily to decrease, while a corresponding number of these which had been cast off were found on the ground. Some were quite fresh, others dry, and warped by the sun. By the 25th of May not a bird was to be seen with one of these appendages; but these were scattered over the ground in all directions. The use of these processes is not easily determined. One hundred and nine eggs were taken from as many nests, which were on a narrow point of the island, only a few feet above the water.

The Lyons (Nevada) "Sentinel" mentions that the eggs of this bird were brought into market in large numbers in the spring of 1870, and sold at the low rate of seventy-five cents per dozen. One egg was said to be equal to three Hen's eggs, and to be quite as palatable.

Professor Kumlien informs me that this Pelican visits Lake Koskonong, in Southern Wisconsin, nearly every spring, arriving and departing in the month of April, none ever remaining into May. He has never noticed any birds of this species on their return in the fall. If they pass by that route southward, their passage is supposed to be by night.

The eggs of the White Pelican have a very uneven surface, with a tendency to granulations in spots, and corrugations. Their color is a uniform dull chalky white, marked in some instances with conspicuous blood-stains. Specimens in the Smithsonian Institution collections (No. 13692) are of a rounded oval shape, and present the following measurements: 3.40 inches by 2.30; 3.15 by 2.15; 3.05 by 2.15; 3.45 by 2.25.

Captain Charles Bendire, who enjoyed unusual opportunities for observing the breeding-habits of this species in Eastern Oregon, has furnished additional and valuable notes in regard to them. He found it a very common summer resident in that region, making its appearance early in spring, before the lakes were free from ice, and moving south early in November. He observed it breeding in large numbers on several of the small islands in the eastern part of Malheur Lake, beginning as early as April 12; the nest being a mere depression scraped in the sand. The number of eggs in a nest was usually two, but occasionally three. In rare instances five were found in the same nest; but these were perhaps the product of more than one female. The birds breed in communities, the nests being about a yard apart. Eggs of this species placed under a Hen were hatched out in twenty-nine days. The eggs were all of a dull chalky white color, and their average measurement — obtained from a large number of examples — was found to be 3.45 inches by 2.30. The following are the measurements of nine eggs selected as representing the extremes (*e. g.* the largest, the smallest, and the most spherical): 3.72 inches by 2.40; 3.86 by 2.35; 3.87 by 2.32; 3.62 by 2.40; 3.60 by 2.40; 3.57 by 2.35; 3.17 by 2.23; 3.20 by 2.21; 3.20 by 2.50. The last is exceptional in shape and appearance, resembling the egg of a very large Bald Eagle.

Pelecanus fuscus.

THE BROWN PELICAN.

Pelecanus fuscus, LINN. S. N. I. 1766, 215. — NUTT. Man. II. 1834, 476. — AUD. Orn. Biog. III. 1835, 376; V. 1839, 212; Synop. 1839, 212; B. Am. VII. 1844, 32, pls. 423, 424. — LAWR. in Baird's B. N. Am. 1858, 870. — BAIRD, Cat. N. Am. B. 1859, no. 616. — COUES, Key, 1872, 300; Check List, 1873, no. 527; 2d ed. 1882, no. 749.

Leptopelicanus fuscus, REICHENB. Syst. Av. 1852, p. vii.

Onocrotalus fuscus, BONAP. Consp. II. 1855, 163.

HAB. Atlantic coast of tropical and subtropical America, north in the United States to North Carolina. Accidental in Illinois (C. K. WORTHEN; cf. Bull. Nutt. Orn. Club, January, 1880, p. 32).

SP. CHAR. Tail of twenty-two feathers. Malar region entirely naked: color silvery gray above and dusky beneath in the adult, brown or grayish above and white beneath in the young; bill grayish; pouch and feet dusky. *Adult, in full breeding-plumage:* Head, and feathers of the neck bordering the base of the gular pouch, white, the forehead sometimes tinged with straw-yellow; rest of the neck rich chestnut or seal-brown, the upper part of the nape with a narrow crest of lighter reddish. Upper parts nearly uniform velvety light ash-gray, the feathers of the upper part of the back, the smaller lesser wing-coverts, the rump, and upper tail-coverts edged with dark snuff-brown. Lower parts uniform dark brownish gray, the feathers of the sides, flanks, and crissum streaked centrally with silvery white. Lining of the wing, and exterior border, snuff-brown, streaked with silvery white. "Bill grayish white, tinged with brown, and marked with irregular spots of pale carmine; upper mandible dusky toward the end, lower blackish from the middle to near the end; bare space between the bill and eye deep blue; eyelids pink; iris white; feet black; gular pouch greenish black, the ridges of its wrinkles lighter" (AUDUBON). *Adult, in winter:* Similar to the above, but head and neck wholly white, the head and lower part of the foreneck usually tinged with straw-yellow. *Young, first plumage:* Head and neck light brownish gray, lighter on the nape, the tips of the feathers paler; back, scapulars, and wing-coverts dull brown, the feathers tipped with light fulvous; secondaries, tertials, and rectrices silvery gray, edged with paler; rump and upper tail-coverts similar. Lower parts white, the sides, flanks, and crissum tinged with brownish gray. "Bill grayish blue, its edges and unguis grayish yellow; gular pouch dull grayish blue; iris brownish yellow; bare space around the eye dusky bluish; feet and claws dull lead-color" (AUDUBON). *Young, in autumn:* Similar to the adult, but head and neck dull light ash-gray, the feathers bordering the base of the gular pouch white, the occiput dark plumbeous or slaty, the feathers streaked centrally, or tipped with white. Upper parts less uniform and more tinged with brownish than in the adult.

P. fuscus, summer plumage.

Total length, about 44.00 to 56.00 inches; extent 6.50 to 7.00 feet; wing, 19.00–21.00 inches; culmen, 9.40–12.20; tarsus, 2.60–3.05; middle toe, 3.40–3.95. (Average of seven specimens, 19.79, 11.12, 2.84, 3.70.)

It was supposed by Audubon and other earlier writers that the white-necked plumage, described above as the winter dress of both sexes, represented the peculiar garb of the female. It is now known, however, that both sexes assume this plumage after the breeding-season, there being at no time any obvious difference between the male and female. (Cf. SCLATER, Proc. Zool. Soc. Lond., 1868, p. 268.)

The Brown Pelican is more tropical in its residence and general distribution than the white, and is chiefly restricted to the Southern Atlantic and Gulf States; the southern portion of California, Mexico, and Central America; and South America. It is accidental on the Atlantic coast farther north than the Carolinas. It has been said to occur as far north as Nantucket; but this has not been positively ascertained.

This species was met with on the Atlantic coast of Guatemala by Mr. Salvin; and was found breeding on the Pacific coast,[1] in the Bay of Fonseca, by Mr. G. C. Taylor, who also found it very abundant both on the Atlantic and on the Pacific coast of

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[1] Accounts of the habits of Brown Pelicans found on the Pacific coast probably refer wholly to the succeeding species or race, *P. californicus*, the description of which was not written until this article had been put in type.

Honduras — and, indeed, wherever he went in the western tropics. These birds have quite a large breeding-place near Fonseca Bay; and it was quite an interesting, as well as a beautiful, sight to watch them when engaged in fishing. They fly at a considerable height, with slowly flapping wings; on seeing a shoal of fish beneath them they round to and fall like a stone in the water, causing the spray to dash up to a height of several feet. If successful, they sit on the water and dispose of their prey. The spray caused by the dashing into the water may be seen far away — much farther than the bird itself is visible.

Mr. Salvin subsequently visited Saddle Bay, on the coast of Honduras, where there was a settlement of this species, and found some forty or fifty birds, both old and immature, but could discover no trace of a nest. He was informed by his boatman that this bird breeds in November; and that as soon as the young can fly, the old birds destroy the nests. A bird less adapted than the Brown Pelican for perching on trees he could hardly imagine; yet he found it sitting on mangrove boughs for hours together, preening its feathers with its long hooked bills, all the time keeping its balance with ease — even when a strong wind tried the security of its footing. A portion were resting on a spit of sand that ran out from one end of the island, and others were fishing in the shallows.

According to Professor Newton, the Brown Pelican is one of the first birds to meet the eye of a stranger arriving at St. Croix. No shooting of any kind is allowed in the roadstead or harbor of Christiansted; and there it is very tame, and takes no heed of what is going on — often flying within a few yards of the landing-stages or boats. In all other places it was much more wary. A few of these birds might almost always be seen in a rill along the shores of the island, either resting lazily on a stump in the water, or with a clumsy activity diving for fish. When engaged in fishing they fly over the shallows until they find a promising spot; there they alight, begin diving incessantly, and always seem to rise to the surface with their heads turned in a direction contrary to that which they had at the moment of diving. These birds were said to breed near the Island of Tortola, or on some rocks adjacent to it.

Dr. Cooper states that the Brown Pelican is very abundant along the whole southern coast of the Pacific during winter, even as far as Panama, where he has seen it in May. It also extends its migrations northward in summer. He could find no traces of its nesting in the more southern islands, but was informed that a few of these birds breed on the Island of Anacapa — a locality which he was unable to visit. He saw none at the Farallones in June, although there were then many about the mouth of the Bay of San Francisco. At San Diego, in February, they were already assuming their mature plumage.

Birds of this species are said to feed chiefly during the rising tide, wandering in extended trains along the shore, and diving occasionally, one after the other, when they meet with a shoal of fish. They are very regular in their motions when flying, keeping at uniform distances, alternately flapping and sailing, in imitation of their leader. They usually fly very close to the surface of the water, and then merely plunge obliquely, holding the bill so as to scoop up the small fish sideways; then, closing their wings, they hold up the head with the bill down, so as to allow the water to run out. This permits the escape of some of the fish, and gives the parasitic Gull a chance to obtain a share of the plunder, without in the least offending the dignified Pelican. Sometimes this bird dives from a considerable height, plunging downward with a spiral motion, although scarcely ever going beneath the surface, but immediately raising its bill from the water — usually with a stock of young fish in it. As a general rule this Pelican does not catch fish more than six inches long; but occasionally one weighing more than two pounds and a half may be found in its pouch. Like most fish-eaters, the Pelican is a stupid bird, seeming to have no ideas beyond the supplying of its immediate wants. It seems to be a very silent bird; and at times prefers feeding in the twilight.

Colonel Grayson found this species very abundant at all seasons near Mazatlan, and also near Socorro, on the coast of Western Mexico. Léotaud states that this Pelican is common about the Island of Trinidad, where it is always found on the shores, except during the time of its breeding-season. Dr. Gundlach observed this bird breeding in Cuba, where he obtained its eggs. Mr. Gosse also found it abundant about Jamaica, in the neighborhood of Bluefield Bay. The latter mentions, as a matter worthy of observation, that the Pelican invariably performs a somerset under the surface of the water; for, descending diagonally, the head emerges turned in the opposite direction from that in which it was looking before diving. In alighting on the water to swim, the Pelican brings its feet into a standing position, and slides along the surface for several yards before it swims. Its pouch is said to hold seventeen pints of water.

Mr. Dresser found this bird common in Southwestern Texas in June, July, and August, and abundant in Galveston in June.

Major Wedderburn records the capture of two specimens of this species in Bermuda. Mr. J. A. Allen also mentions ("Naturalist," IV. 58) that a flock of five of these birds came in from the sea in a storm, apparently much fatigued, and alighted on the beach near Sankaty Head Lighthouse, Nantucket, where they remained until they were driven away by being fired at. This is the only instance, so far as I am aware, of the occurrence of this Pelican in New England.

Mr. N. B. Moore, of Sarasota, Fla., writes me that he has known this bird capture its prey without plunging into the water, by thrusting its bill forward among the shoal of small fry.

In Florida, where the Brown Pelican is a constant resident, Audubon has never known it to enter fresh-water streams in the manner of the White Pelican. He states that it is rarely seen north of Cape Hatteras. It was formerly quite common at Charleston, S. C., but is now comparatively rare there; and is not known to breed north of the salt-water inlets fifty miles south of St. Augustine. On the ground the Pelican walks heavily, and when it attempts to run, does so very clumsily, stretching out its neck, partially extending its wings, and reeling from side to side. It usually keeps in flocks of about fifty individuals, of both sexes, and of different ages. Audubon found it nesting on the tops of the mangroves — usually on the southwest side. The nests were composed of sticks laid crossways until a strong platform is constructed; the inner nest, a shallow basin, being made with fine roots and withered plants; these nests were often placed side by side, covering the top of the tree. The eggs are usually three in number, elliptical in shape, and averaging 3.13 inches in length by 2.13 in breadth; the shell is thick and rough, and of a chalky-white color. When fresh the eggs have a rosy tint, and are usually more or less stained and discolored.

Eggs in the Smithsonian Collection, from the Tortugas, Fla. (No. 2955), are of a uniform pinkish chalky-white color. Three present the following measurements: 2.95 by 1.90 inches, 2.90 by 2.00; 2.85 by 2.00.

Pelecanus (fuscus?) californicus.

THE CALIFORNIAN BROWN PELICAN.

?? *Pelecanus Molinæ*, GRAY, Gen. B. III. 1845 (*Nomen nudum!*).

?? *Pelecanus Molinæ*, "GRAY," SCL. P. Z. S. 1868, 269. — ELLIOT, P. Z. S. 1869, 588, pl. 44 (young?).

Pelecanus fuscus, AUCT. (all citations from the Pacific coast of the United States and Mexico, south, at least, to Cape St. Lucas).

HAB. Pacific coast, from San Francisco to Cape St. Lucas. (Also probably Pacific coast of Mexico and Central America.)

SP. CHAR. Similar to *P. fuscus*, but decidedly larger, the gular sac, in breeding-plumage, reddish instead of greenish, and the chestnut of the nape usually much darker (often nearly black). "Bare skin around eye, brown; base and much of pouch deep red" (fresh colors of an adult male "in breeding-plumage and condition" shot Feb. 24, 1882, at La Paz, Lower California; cf. BELDING, Proc. U. S. Nat. Mus. Vol. 5, 1883, p. 545). Culmen, 12.25–14.75 inches; wing, 20.50–23.25.

In Volume V. of the "Proceedings" of the United States National Museum, p. 545, the following comments occur concerning a specimen of Brown Pelican from La Paz, Lower California, collected by Mr. L. Belding: "In the . . . specimen sent, the back of the neck is a rich brownish black, quite different from the seal-brown or chestnut of all eastern specimens I have seen. Audubon describes the color of the naked orbits [of *P. fuscus*] as pink, the naked skin about the base of the bill as deep blue, and the pouch greenish black. Thus it would seem that the soft parts are very differently colored. Should this difference prove constant, the western bird would have to be separated as a race."

In dried skins it is unfortunately not possible to detect the original color of the soft parts; but a second example received from Mr. Belding (No. 90035, U. S. National Museum, ♀ ad., San José, Lower California, Feb. 8, 1882), agrees closely with the male, the red color of the pouch being at this date (April 25, 1884) very perceptible. Both these specimens are decidedly larger than any we have seen from Florida, the West Indies, or other localities on the Atlantic side; and on comparing three adults from San Francisco Bay (the only additional ones from the Pacific side that we have been able to examine), we find them to agree in larger size. Only one of them is in summer plumage, however, and this (No. 9958, U. S. Nat. Mus., ♂ ad.) has the nape light chestnut, as in some of the lighter colored eastern examples; but the feathers of this part of the plumage appear worn and faded. It may be that the supposed difference in the color of the nape will not prove sufficiently constant to serve as a diagnostic character; but even if this should be the case the difference in dimensions[2] and in the color of the soft parts is of itself, in our opinion, sufficient to justify the recognition of two species or races.

It may be that this bird is the "*Pelecanus Molinæ*, GRAY," of Messrs. Sclater and Elliot, as cited in the synonymy; but from the very meagre descriptions given it is unfortunately quite impossible to tell with certainty.

The account of the habits of Californian specimens given under the head of *P. fuscus* of course refer to the present form.

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[1] No. 86384, U. S. Nat. Mus.; La Paz, Feb. 24, 1882.

[2] The five adult examples of *P. californicus* compared with seven adults of *P. fuscus* as follows, the extreme and average measurements being given: —

	Wing.	Bill, from base of culmen.
P. californicus,	20.50–23.25 (21.75)	12.25–14.75 (12.90)
P. fuscus,	18.50–21.00 (19.79)	9.40–12.20 (11.12)

FAMILY PHALACROCORACIDÆ. — THE CORMORANTS.

CHAR. Bill small (shorter than the middle toe), variable in outline, but the maxillary unguis always prominent and strongly hooked; nostrils obliterated; lores, orbital region, lower jaw, chin, and upper part of throat naked. Middle toe longer than, or about equal to, the tarsus, the outer toe much longer, and the inner about as much shorter. Wings rather short, concave, reaching but little beyond the base of the tail; tail variable as to length, usually rounded or graduated, the feathers stiff, with very rigid shafts, which are exposed almost to the base of the tail, on account of the much abbreviated coverts. Plumage very compact, usually dark-colored and glossy.

GENUS **PHALACROCORAX**, BRISSON.

Pelecanus, LINN. S. N. 1758 and 1766 (part).
Phalacrocorax, BRISS. Orn. VI. 1760, 511 (type, *Pelecanus carbo*, LINN.).
Carbo, LACÉP. Mem. de l'Inst. 1800-1801.
Urile, BONAP. Consp. II. 1856, 175 (type, *Pelecanus urile*, GMEL.).
Halieus, ILLIG. Prodr. 1811, 279. — BONAP. Consp. II. 1856, 177 (type, *Hydrocorax melanoleucus*, VIEILL.).
Hydrocorax, VIEILL. Analyse, 1816, 63.
Graucalus, GRAY, List Gen. 1841, 101.
Graculus, GRAY, Gen. B. III. 1845, 667.
Hypoleucus, REICH. 1853 (type, *Pelecanus varius*, GMEL.). — BONAP. Consp. II. 1856, 173.
Stictocarbo, BONAP. "1854," Consp. II. 1856, 174 (type, *Pelecanus punctatus*, GMEL.).
Microcarbo, "BONAP. 1856" (type, *Phalacrocorax pygmæus*, PALL.).

CHAR. Same as those of the family.

NOTE. — As in the case of the genus *Pelecanus*, it is quite likely that a systematic investigation of the Cormorants will eventually require a subdivision of the genus *Phalacrocorax*, as here defined.

Synopsis of North American Cormorants.

A. Bill robust, the maxillary unguis arched and strongly hooked, the culmen slightly concave in the middle portion, and gently ascending basally. (*Phalacrocorax.*)

a. Tail-feathers fourteen.

1. **P. carbo.** Size large (largest of the genus). *Adult*, with white patch adjoining base of the gular pouch; rest of head, neck, and lower parts blue-black; back and wing-coverts grayish brown, feathers bordered with black. *In breeding-season*, head covered with white filaments, occiput with a short mane-like black crest, and flanks with a large white patch. *Hab.* Europe, and Northeastern North America.

b. Tail-feathers twelve.

2. **P. dilophus.** Usually smaller than *P. carbo*. *Adult*, greenish blue-black, the back and wings slaty brown, feathers bordered with black. *In breeding-season*, crown with a tuft on each side (behind eye) of lengthened, curved, narrow black or white feathers. *Hab.* Whole of North America.
3. **P. mexicanus.** Very small (wing less than 10.50 inches). *Adult*, brownish black, with a white line bordering the base of the gular pouch; mantle dull brownish slate, the feathers narrowly bordered with black. *In the breeding-season*, head, neck, and anal region ornamented with scattered small white filaments. *Hab.* Mexico, Cuba, and southern border of United States, north to Kansas and Southern Illinois.

B. Bill robust, compressed, the culmen straight, the maxillary unguis slender and not arched. Tail-feathers fourteen, very short (less than half the wing). (*Compsohalieus.*[1])

4. **P. penicillatus.** *Adult*, glossy blue-black, with a patch of pale fawn-color or brownish white adjoining base of the gular sac. *In the breeding-season*, sides of the neck and upper scapulars ornamented by long, stiff, bristly white or pale straw-colored filaments. *Hab.* Western coast of North America.

C. Bill slender (more robust in *P. perspicillatus*), nearly cylindrical, the maxilla much broader than deep, its unguis abruptly hooked and not arched, that of the mandible strongly convex below. Tail-feathers twelve. (*Urile.*)

5. **P. pelagicus.** Feathers of the forehead advancing to the base of the culmen. *Adult*, head and neck rich silky violet; lower parts and rump silky dark green; scapulars and wings bottle-green, tinged with purple. *In the breeding-season*, neck and rump ornamented by narrow pure-white filaments, and flanks covered with a pure-white patch. *Hab.* Pacific coast of North America.
6. **P. urile.** Feathers of the forehead separated from the base of the culmen by a strip of bare skin connecting the naked lores. *Adult*, similar to *pelagicus*, but neck less purplish, the scapulars rich purplish violet. Nuptial ornaments same as in *P. pelagicus.* *Hab.* Coast and islands of Alaska, north of Kadiak.
7. **P. perspicillatus.** Similar to *pelagicus* and *urile*, but much larger (length, 36.00 inches, bill 4.00, tail 9.00, tarsus 3.00), with straw-colored filaments on head and upper neck, the eyes encircled with a broad white ring of naked skin, like spectacles. Otherwise much like *urile* in plumage. *Hab.* Behring Island, Kamtschatka; "Russian America." (Probably now extinct!)

Phalacrocorax carbo.

THE COMMON CORMORANT.

Pelecanus carbo, LINN. S. N. ed. 10, I. 1758, 133; ed. 12, I. 1766, 216.
Phalacrocorax carbo, BONAP. Synop. 1828, no. 353. — NUTT. Man. II. 1834, 479. — AUD. Orn. Biog. III. 1835, 458; Synop. 1839, 302; B. Am. VI. 1843, 412, pl. 415. — RIDGW. Nom. N. Am. B. 1881, no. 642. — COUES, Check List, 2d ed. 1882, no. 750.
Graculus carbo, GRAY, Gen. B. 1845. — LAWR. in Baird's B. N. Am. 1858, 876. — BAIRD, Cat. N. Am. B. 1859, no. 620. — COUES, Key, 1872, 302; Check List, 1873, no. 528.
Carbo macrorhynchus, LESS. Traité, 1831, 604 (Newfoundland).
Phalacrocorax carbo, var. *macrorhynchus*, BONAP. Consp. II. 1855, 168.
Phalacrocorax macrorhynchus, BONAP. Compt. Rend. XLII. 1856, 766.
Pelecanus phalacrocorax, BRÜNN. Orn. Bor. 1764, 31.
Carbo cormoranus, MEYER, Taschenb. II. 1810, 576.
Carbo glacialis, *arboreus*, and *subcormoranus*, BREHM. Vög. Deutschl. 1831, 817, 818, 819.
Phalacrocorax americanus, REICH. Syst. Av. 1850, t. 47.

HAB. Coasts of the North Atlantic; south, in America, to New Jersey in winter.

SP. CHAR. Tail of fourteen feathers; bill strong, the culmen slightly concave in the middle portion, ascending basally, the nail arched and strongly hooked; maxilla broader than high. Outline of the feathering behind the orbits rounded, extending thence backward and downward to behind the rictus (where the bare skin forms an obtuse angle), then straight downward across the lower jaw, and finally curving gradually forward, forming an acute angle on the middle of the gular pouch. *Adult, in full breeding-plumage:* Occiput with a narrow mane-like pendant crest of soft feathers. Head, neck, rump, and lower parts soft glossy blue-black; back, scapulars, and wing-coverts bronzy slate-brown, each feather broadly and sharply bordered with blue-black; primaries and tail deep dull black, the shafts of the latter growing milky white toward the base. A broad crescentic patch of white adjoining the posterior part of the gular pouch, its posterior outline nearly parallel in its curvature with the anterior; but the patch becomes narrower upward, where it extends on each side to immediately behind the orbit. A large white patch on each flank, at the insertion of the leg. Entire top and sides of the head (except the occipital crest), down nearly to the middle of the neck, covered with narrow white filamentous feathers. "Upper mandible grayish black, along the edges yellowish white; lower yellowish white at the base, dusky toward the end; iris light bluish green, margins of eyelids dusky; bare space about the eye dull olive, below it bright red, the gular sac yellow; feet and claws grayish black"[1] (AUDUBON). *Adult, in winter:* Similar to the above, but white flank-patch and filamentous feathers of the head absent. No red in the bare skin of the head. *Young, first plumage:* Above, dull brownish gray, the feathers bordered with dull black (much less sharply than in the adult); rump and upper tail-

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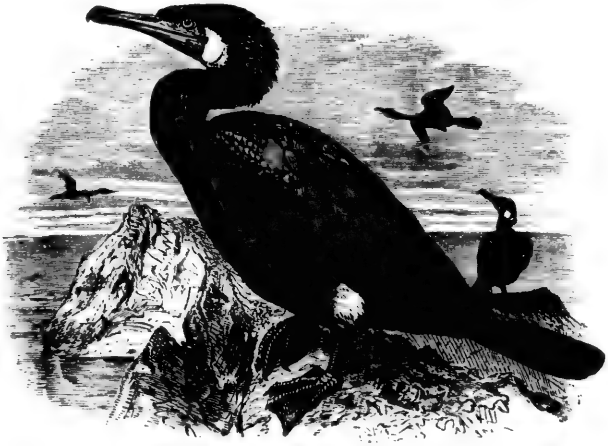
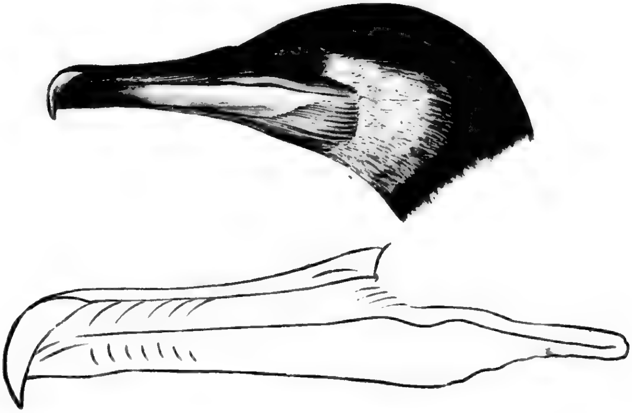
[1] *Compsohalieus*, RIDGW.; type, *Carbo penicillatus*, BRANDT (*κομψός = comptus*, and *ἁλιεύς = piscator*).



P. carbo.



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[1] According to Audubon, the "soft parts" of an adult female obtained in July were colored as follows: "The bill, eyes, and feet are colored as in the male [see above], as are the bare parts about the base of the bill; only the part under the eye, which is bright red in the male, is bright yellow in the female."

coverts black, slightly glossy; primaries and tail dusky, the shafts of the rectrices dull light ashy, paler basally. Head, neck, and jugulum dull grayish brown, the pileum and nape blackish dusky, the upper part of the throat brownish white; remaining lower parts brownish dusky, mixed with white along the median line. *Young, in winter:* Similar to the above, but upper part of throat, jugulum, breast, and middle of the abdomen white, streaked, except on the first, with grayish brown; pileum, nape, sides of the neck, and middle of the foreneck grayish brown.[1] *Nestling:* "The inside of the mouth and the gular sac flesh-colored; the bill dusky, at the base flesh-colored; the eyes bluish gray. The general color of their skin is dull livid; the feet purplish dusky, the webs yellowish brown" (AUDUBON).

Total length, about 37.00 inches; extent, 40.00; wing, 12.90–14.00; tail, 7.25–7.75; culmen, 2.30–2.85; tarsus, 2.51; outer toe, 3.47. (Average of four specimens, 13.84, 7.50, 2.57, 2.51, 3.47.)

We have not been able to examine sufficient material to enable us to decide whether, to our mind, American examples of this species are separable from European.

The Common Cormorant appears to be a bird of very general distribution throughout nearly the whole northern hemisphere — breeding in high northern regions, wandering southward in the winter, and occurring also irregularly in places distant from its usual resort. It is found in Greenland and Labrador, in North America, in summer, and along the Atlantic coast in winter. It breeds in Northern Europe and Asia, and wanders in winter to the Mediterranean, to India, to China, to Japan, and even to Australia. Though met with on the eastern shores of Asia, I cannot find that any are reported from the western coast of North America.

The Cormorant is almost exclusively confined to the sea-coast and large rivers, and is only occasionally seen on inland waters. Like the Pelican, the Gannet, and the Booby, it is a fisher, and lives exclusively upon the food it thus catches. Its plumage, its general structure, and its powerful hooked bill are admirably adapted for this mode of life.

It is given by Reinhardt as a regular resident of Greenland, breeding on its coast, and continuing there the greater part of the year. It was also met with by Dr. Walker on the same coast, near Godthaab. Audubon and Dr. Bryant found it breeding in considerable numbers in the Gulf of St. Lawrence and on the coast of Labrador.

The Messrs. Godman found this bird abundant on all the islands off the coast of Norway, where it was breeding indiscriminately in company with the common Crested Shag. It is also given by Middendorff as occurring in Siberia, in the northern barrens, or *tundras.*

Lieutenant Sperling mentions finding this species abundant in the Mediterranean. On the morning of December 6, when shooting Ducks on the coast of Greece, he saw a large flock of Cormorants — not less than two thousand in number — passing close over his head as he was lying concealed; they appeared to be flying in a southeast direction. Mr. Saunders found this species common in Southern Spain, where, during the winter, it was very generally distributed along the coast and on the principal rivers. Captain G. E. Shelley found it abundant throughout Egypt during the winter; but did not observe any in Nubia, nor did he meet with any after March. Dr. A. L. Adams speaks of finding this bird in large numbers below Thebes, and thence northward, in which region it was seen roosting in flocks on the date-trees. He thinks it was breeding near Manfloot.

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[1] These two descriptions of the young are taken from two European examples without dates on their labels. They may be of the same age, and the differences of coloration due to individual variation; but judging from analogy in the case of *P. dilophus*, the whiter the lower parts, the greater the age of the individual — the black of the adult dress appearing in spots the following, or possibly not until the third, year.

Mr. R. Swinhoe states that he found this Cormorant somewhat abundant on the rocks about Formosa, and also in Southern China, during the winter. Early in the spring it assembled in flocks, and seemed to be moving southward. He also states that birds of this species are tamed by the Chinese, and taught to catch fish for the benefit of their owners. In this state of domestication they become subject to great variations in their plumage. Mr. Swinhoe also found them common during the winter at Amoy. They assembled there also in large flocks, preparatory to leaving to pass the summer months elsewhere. Mr. H. Whitely mentions procuring two examples of this species at Hakodadi, in Japan, in December. Messrs. Blakiston and Pryer also speak ("Ibis," 1878, p. 216) of seeing great numbers roosting in some trees at Babasaka, in the centre of Tokio. They were seen flying over that city to their roosting-place in immense V-shaped lines, three, and even four, hundred yards long. This species was also found far inland in Yamoto, on the mountain streams, feeding on trout. It was seen on the coast of Yezo, and also at Yokohama.

A single specimen was obtained by Captain Hutton ("Ibis," 1871) among the Chatham Islands, about five hundred miles east of New Zealand.

This species is not mentioned by Gosse as having been found in Jamaica, nor by Dr. Gundlach as occurring in Cuba. Léotaud, however, states — but doubtless erroneously — that it is a migratory visitant of Trinidad, coming each year at the close of July.

In Great Britain, according to Yarrell, this bird is known as the Great Cormorant, or Black Cormorant; and is there found in considerable numbers on the rocky portions of the entire coast. For their breeding-stations they seem to prefer the higher parts of rocky cliffs, where many individuals of this species congregate harmoniously together. There they make large nests composed of sticks, with a mass of seaweed and long coarse grass. They lay from four to six eggs, which are small compared with the size of the bird. The eggs are oblong in shape, alike at both ends, rough externally in texture, and of a chalky-white color, varied with pale blue; they are 2.75 inches in length, and 1.63 inches in their breadth. Upon an island near Castle Martyr, belonging to the Earl of Shannon, in Ireland, the nests of more than eighty Cormorants are said to have been counted in a single season, on Scotch fir-trees not under sixty feet in height, where they securely raised their young. Rev. Dr. Lubbock also states that this bird in some seasons has been known to nest in trees near Fritton, in Norfolk. Mr. Malherbe also states that it breeds in the marshes in Sicily, in trees. This mode of nesting is probably abnormal, having been caused by persecution.

According to Selby, the young bird of this species, when first excluded, is blind, and covered with a bluish-black skin. In a few days it acquires a thick covering of black down, and in the space of three weeks, though still unable to fly, it is sufficiently fledged to take to the water.

The Cormorant flies with great rapidity and vigor, usually near the surface of the water. It can swim with great rapidity, and has no superior in diving. It can catch its food — which consists of fish — with great ease, and which it holds securely with the sharp hooked horny points of its upper mandible. Its throat admits of being greatly dilated, so that it is able to swallow a fish of large size. It stations itself on a post, a projecting rock, or a leafless branch near the water, in a position where its powers of vision enable it to discover a passing fish, upon which it pounces with a never-failing aim.

As evidence that the Cormorant possesses considerable intelligence, and that it is easily reconciled to confinement, Montagu gives an account of one which soon became so tame and attached to its owner that it seemed never to be so happy as when permitted to remain by his side. Sir Robert S. Adair informed Yarrell that he was eye-witness to a pair of Cormorants feeding and bringing up a nest of Ravens — whose natural parents had been killed — and he noticed that they kept the young birds well supplied with fish.

This species formerly bred at several points on the New England coast, from Nahant northward; but it has long since been driven away, although a few of these birds still breed on rocky cliffs in Frenchman's Bay and in the Bay of Fundy. During the winter and in the fall they are met with in their migrations along the sea-coast from Maine to the Delaware, and even still farther south.

Audubon found this Cormorant breeding on the rocky coast of Labrador. The nests were placed on the highest shelves of the precipitous rocks fronting the water, and were formed of a quantity of small sticks, matted in a rude way with a quantity of weeds and mosses, having a thickness of from four to twelve or more inches. The same nests were evidently occupied for several years in succession. These nests varied greatly in their size, and some were crowded close together on the same shelf; but they were generally placed at some distance from each other. The eggs were usually three or four in number.

In the summer of 1860 — twenty-seven years after Audubon's visit — Dr. Bryant examined the same cliffs, on the south side of the rocky wall which bounds the Gulf of St. Lawrence, at Wapitaguan, where he found the nests built precisely as described by Audubon, and placed wherever room could be found for them. On the 26th of June some contained half-grown young, and others were but just completed. The full number of eggs was four. In shape they were more regular than the Florida, but less so than the Double-crested, Cormorants. The calcareous coating of the egg is softer than in the *floridanus*, and can readily be rubbed off with the fingers. In some specimens this is quite thick, and is deposited in irregular sheets or lumps. The birds were very tame, and returned to their nests as soon as he moved from the spot. On alighting on the sides of the precipice they cling to it with their tail and claws, in the manner of Swifts or Woodpeckers; and before alighting they almost always swooped down to very near the surface of the water, and then rose in a curved line to the surface of the cliff, without moving their wings, and almost with the regularity of a pendulum. He estimated the number of this species breeding on these cliffs at from four to five thousand. Dr. Bryant gives the measurement of four eggs, as characteristic of their general size and shape, as follows: 2.65 by 1.49 inches; 2.39 by 1.49; 2.35 by 1.60; 2.52 by 1.29.

Phalacrocorax dilophus.

a. Dilophus. THE COMMON DOUBLE-CRESTED CORMORANT.

Pelecanus (Carbo) dilophus, SW. & RICH. F. B. A. II. 1831, 473.

Phalacrocorax dilophus, NUTT. Man. II. 1834, 483. — AUD. Orn. Biog. III. 1835, 420; V. 1839, 629, pl. 257; Synop. 1839, 302; B. Am. VI. 1844, 423, pl. 416. — RIDGW. Nom. N. Am. B. 1881, no. 643. — COUES, 2d Check List, 1882, no. 751.

Graculus dilophus, GRAY, Gen. B. III. 1849. — BAIRD, B. N. Am. 1858, 877; Cat. N. Am. B. 1859, no. 623. — COUES, Key, 1872, 303; Check List, 1873, no. 530.

Graculus dilophus a. *dilophus*, COUES, B. N. W. 1874, 587.

b. **Floridanus**. THE SOUTHERN DOUBLE-CRESTED CORMORANT.

Phalacrocorax floridanus, AUD. Orn. Biog. III. 1835, 387 ; V. 1839, 632, pl. 251 ; Synop. 1839, 303 ; B. Am. VI. 1843, 430, pl. 417.

Graculus floridanus, BONAP. Consp. II. 1855, 172. — LAWR. in Baird's B. N. Am. 1858, 879. — BAIRD, Cat. N. Am. B. 1859, no. 624.

Graculus dilophus, var. *floridanus*, COUES, Key, 1872, 303 ; Check List, 1873, no. 530*a*.

Graculus dilophus, b. *floridanus*, COUES, B. N. W. 1874, 587.

Phalacrocorax dilophus floridanus, RIDGW. Nom. N. Am. B. 1881, no. 643*a*. — COUES, 2d Check List, 1882, no. 753.

c. **Cincinnatus**. THE WHITE-TUFTED CORMORANT.

Carbo cincinnatus, BRANDT, Bull. Sc. Ac. St. Petersb. III. 1838, 55.

Graculus cincinnatus, GRAY, Gen. B. 1845. — LAWR. in Baird's B. N. Am. 1858, 877. — BAIRD, Cat. N. Am. B. 1859, no. 622.

Phalacrocorax cincinnatus, BONAP. Consp. II. 1855, 168 ; Compt. Rend. XLII. 1856, 766.

Phalacrocorax dilophus cincinnatus, RIDGW. N. Am. B. 1881, no. 643*b*. — COUES, 2d Check List, 1882, no. 752.

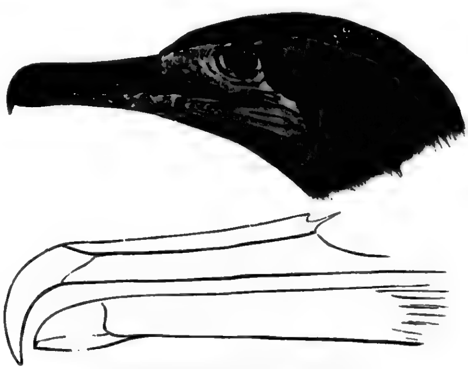
Graculus dilophus, DALL & BANNIST. Trans. Chicago Acad. I. 1869, 302 (Sitka).

d. **Albociliatus**. THE LESSER WHITE-TUFTED CORMORANT.

Phalacrocorax dilophus albociliatus, RIDGW. Cat. Aquat. and Fish-eating Birds, 1883, 27 (no description) ; Proc. Biol. Soc. Washington, II. Apr. 10, 1884, 94.

HAB. Of true *dilophus*, the whole of Eastern North America, breeding chiefly north of the United States ; of *floridanus*, South Atlantic and Gulf States, and Lower Mississippi Valley, to Southern Illinois ; of *cincinnatus*, the Pacific coast of North America, south in winter, to California, north to coast of Norton Sound, Alaska ; of *albociliatus*, coast of California, south to Cape St. Lucas and Revillegigedo Islands.

SP. CHAR. Basal outline of the gular pouch extending straight across the throat or projecting slightly back along the median line. *Adult, in full breeding-plumage:* Head, neck, rump, and entire lower parts, glossy black, with a faint lustre of dull bluish green ; back, scapulars, and wings, dull grayish brown, each feather conspicuously and broadly bordered with black ; tail uniform dull black. A tuft of narrow, lengthened, curved feathers on each side the crown, springing from behind and above the eye, these feathers either wholly black (in eastern specimens), mixed black and white (in specimens from the interior), or wholly pure white (in Pacific coast examples); neck sometimes, but rarely, with a few scattered white filamentous feathers. Maxilla black, mottled with grayish or dull yellowish along the sides; mandible yellowish or pale bluish, mottled with dusky ; loral region and gular sac deep orange ; eyelids and whole interior of the mouth bright cobalt-blue, the former sometimes dotted with white iris bright grass-green ; legs and feet deep black.[1] *Adult, in winter:*


P. dilophus floridanus, nuptial dress.

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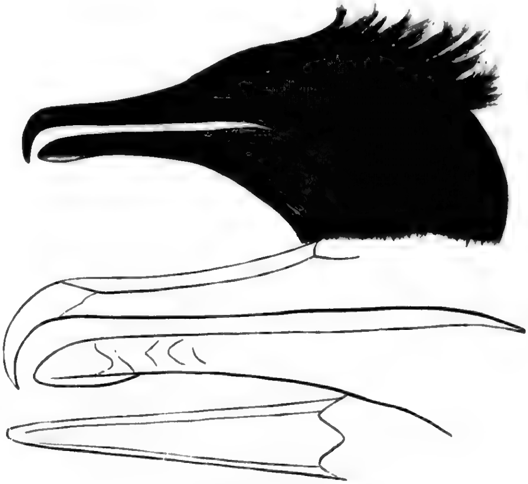
[1] Audubon gives the fresh colors of the larger eastern form (or true *dilophus*) as follows : — "*Adult male, at commencement of the breeding-season:* Upper mandible dusky, along the edges grayish-yellow ; lower yellow, irregularly marked with dusky toward the edges. Iris bright green, margin of eyelids,

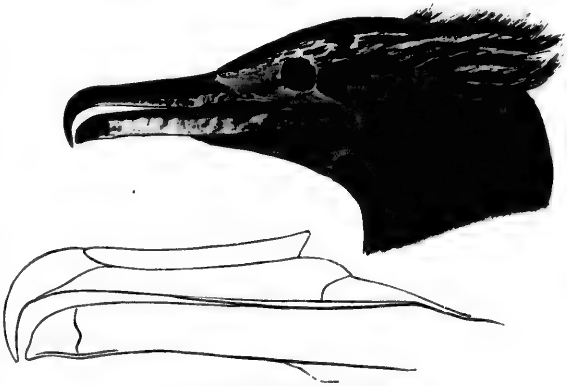
Similar to the above, but tufts of the head wanting, and the bare skin of the lores, gular pouch, etc., deep yellow instead of orange, and the blue of the mouth and eyelids absent. *Young, first plumage:* Head and neck grayish brown, lighter next to the gular sac, darker on the crown and nape; back, scapulars, and wings, dull brownish gray, the feathers bordered with dusky brown; rump dusky brown; primaries and tail dull grayish black; lower parts light fawn-color, darker on the sides, anal-region, and crissum. Bill dull brownish yellow, nearly black on the culmen; gular sac deep chrome yellow; iris greenish gray; legs and feet deep black. *Young, in winter:* Similar to the above, but throat, jugulum, and breast paler, sometimes quite white.

Total length, about 29 to 33 inches; extent, 45 to 55; wing, 11.20–14.00; tail, 5.60–8.50; culmen, 1.90–2.55; tarsus, 2.05–2.90; longest toe, 3.05–3.75. (A marked increase of size to the northward.)



P. dilophus, nuptial dress.

A very careful examination and comparison of more than fifty examples of these birds, very clearly proves the identity of the three supposed species respectively called by authors *P. dilophus*, *P. floridanus*, and *P. cincinnatus*, the latter representing a very marked geographical modification of color; the so-called *floridanus*, on the other hand, representing merely a slight modification of size. The examination in question shows the geographical variation in this species to be of two kinds, viz.: (1) A more or less marked increase of size to the northward, and (2) a gradual change from uniform glossy black nuptial crests, in eastern birds, to crests entirely pure white, or with merely a slight admixture of black,



P. dilophus cincinnatus, nuptial dress.

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bare space on the head, and gular sac, rich orange. Feet and claws black." "*P. floridanus:*" — "*Adult male, in spring:* Upper mandible black, along the basal margins bright blue; lower bright blue, curiously spotted with white. Iris light green, margins of eyelids light blue, spotted with white. Bare space on the head and gular sac rich orange. Feet and claws grayish black."

in Pacific coast examples; specimens from the interior of the continent having the tufts mixed black and white. The question of whether a subspecies *floridanus* should be recognized involves the expediency of recognizing a fourth race in the resident bird of the Californian (including the Lower Californian) coast, which differs from the true *P. cincinnatus* of the northern Pacific coast in exactly the same characters that distinguish the so-called *floridanus* from *dilophus* proper; *i. e.*, in smaller size, with relatively weaker bill, the difference in the two cases being apparently greater in the case of the western forms. Regarding the small Californian bird with white crests as being much more entitled to recognition as a race than *floridanus*, Mr. Ridgway has already separated it as such under the name of *albociliatus*.

The following measurements of specimens from various localities will convey an idea of the geographical variation in size in this species: —

a. Five specimens from Northeastern North America.

	Wing.	Tail.	Culmen.
Maximum,	12.90	7.50	2.45
Average,	12.46	7.15	2.36
Minimum,	12.20	6.50	2.10

b. Ten specimens from Florida.

	Wing.	Tail.	Culmen.
Maximum,	12.50	7.75	2.40
Average,	11.77	7.00	2.17
Minimum,	11.20	6.50	2.00

c. Six specimens from Southern Illinois and Iowa.

	Wing.	Tail.	Culmen.
Maximum,	13.00	8.00	2.35
Average,	12.34	7.29	2.10
Minimum,	12.00	7.00	2.00

d. Two specimens from Great Salt Lake, Utah.

	Wing.	Tail.	Culmen.
Maximum,	12.60	7.50	2.20
Average,	12.55	7.37	2.17
Minimum,	12.50	7.25	2.15

e. Twelve specimens from coast of California and Lower California.

	Wing.	Tail.	Culmen.
Maximum,	13.00	7.75	2.35
Average,	12.23	6.89	2.15
Minimum,	11.75	6.00	1.90

f. Seven specimens from Northwest coast (including one each from Nevada and Oregon).

	Wing.	Tail.	Culmen.
Maximum,	14.00	8.50	2.55
Average,	13.70	7.75	2.40
Minimum,	12.50	7.50	2.25

Summary of averages.

	Wing.	Tail.	Culmen.	
Northeastern specimens,	12.46	7.15	2.36	Five specimens.
Florida "	11.77	7.00	2.17	Ten "
Mississippi Valley "	12.34	7.29	2.10	Six "
Utah "	12.55	7.37	2.17	Two "
California "	12.23	6.89	2.15	Twelve "
Northwestern "	13.70	7.75	2.40	Seven "

The above figures would of course be somewhat changed were an equal number of specimens from each region measured. The general result, however, would in all probability be the same, showing a gradual diminution in size to the southward.

The Double-crested Cormorant is an exclusively North American species; it is found both on the Atlantic and on the Pacific coast, and is also not uncommon on our inland waters; differing essentially in this respect from the *carbo*. Mr. Bernard Ross met with it in the neighborhood of Great Slave Lake, where he saw no other form of Cormorant. Two examples were obtained at Sitka by Mr. Bischoff. It was also found on Vancouver Island by Mr. R. Browne. It is an unsuspicious species, and may be easily approached and shot.

Dr. Cooper describes this species as common along the Pacific coast; and, as he also states, he has met with it on the Colorado, in small numbers, in winter — although, like all other fishing birds, the Cormorant inclines to avoid that river, on account of the muddiness of its waters. This bird is said to be a permanent resident along the whole of the Pacific coast; and north of the Columbia River it is found on clear inland waters. It nests on the steep ridges and cliffs of the islands, and occasionally on the main shores. The nests are composed entirely of sticks, neatly piled up in a conical form, about one foot high, with a depression in the middle. The eggs are said to be three or four in number, and to have an average measurement of 2.25 inches in length by 1.40 in breadth. They are of a greenish-white color, with more or less of calcareous incrustations. The birds lay from the first of May to July; and if they are robbed they will lay several times. The eggs have a very strong and disagreeable flavor, and they cannot be made to coagulate by boiling; yet, as Dr. Cooper states, there are persons who can eat them.

Like the common Black Cormorant, this bird lives entirely on fish, which it catches by pursuing them under the water, diving only from the surface, and never when flying. Its power of swimming is very great, and it can remain under the water for a long time, so that when only wounded its pursuit in a boat is useless. Individuals of this species occasionally seem to prefer inland waters during the summer, while others breed on the islands at sea and along the large rivers. They may often be seen sitting on snags or on rocks; but are so shy that they cannot be approached in a boat, although in flying they often pass very near the hunter, and thus afford an opportunity for a shot. In winter they associate in small numbers with the more marine species. This seems to be an altogether silent species. In flying it proceeds by constant and laborious flappings, and moves with great rapidity. Occasionally it sails for a short distance.

Mr. Henshaw states that it nests on the Farallon Islands and upon the Santa Barbara Group; and that it is common along the coast and on the interior waters. Mr. Hepburn also states that it breeds along the Sacramento River, where in the spring he found these birds already having their peculiar crests.

Mr. J. A. Allen mentions meeting with this species in considerable numbers in the valley of Great Salt Lake, where it bears the singular name of Black Brant. It also occurs in small numbers, in the spring and fall, in the vicinity of Lake Koskonong, in Southern Wisconsin, where a few mature specimens have been obtained by Professor Kumlien, who informs me that this has of late years been found to be by no means an uncommon bird in that region. It is met with there only in the spring, collecting, about sunset at that time of the year, in a grove of dead trees, at the mouth of Koskonong Creek, as well as at other points near the lake, where, at the present time, the larger trees have been killed by the unusual prevalence of high water. When Mr. Kumlien first came to that region these trees were living, and these birds either did not frequent that locality in such large numbers as now, or their presence was not noticed.

Major Wedderburn mentions the taking of two examples of this species on Bermuda: one was shot in October, 1847; the other in February, 1848.

This is a common bird in the spring and fall in the neighborhood of Calais and in all parts of the Bay of Fundy; it also visits the sea-coast of the United States as far south as Maryland, and is believed once to have been resident on the northern shores of Massachusetts, but long since to have been driven away.

Audubon states that he saw it breeding on the Seal Islands, off the Bay of Fundy, and that it was also found by his son nesting on a low flat island a few miles from the entrance of the harbor of Wapitaguan, where some of the nests contained eggs, the others young of all sizes. None of the latter attempted to gain the water, but they all hid themselves in the fissures of the rocks. The nests were formed of a few sticks, together with seaweeds, moss, and clods of earth. These were piled in a solid mass three feet high, and having a diameter of from fifteen to eighteen inches at the top, and two and a half feet at the base. The eggs — three or four in number — averaged 2.50 by 1.56 inches, were of an elongated form, and were covered with a white calcareous coating, showing when removed a fine light greenish blue tint underneath. The young when just hatched are of a bluish black color tinged with purple, and are blind for several days. In this condition they are fed by the parents, with the greatest care, with prepared food, regurgitated into their open throats. Afterward they become covered with long down of a brownish black. Their eggs are not deemed fit to eat, and are never gathered by the fishermen.

Dr. Bryant found this Cormorant breeding in company with *P. carbo* on the rocks at Wapitaguan; but not by any means present in such large numbers as was the last-named species, with the nests of which the northern part of the breeding-place was exclusively occupied. Though early in the season, there was hardly a trace of the crest remaining on any of the birds. Their nests were as bulky as those of the common species, and it was probably not uncommon for the old nest of the one species to be occupied by the other during a later season. As a general thing this Cormorant preferred the lowest ledges, although the highest nest of all was of this species. Where the ledge was long enough to admit of several nests, it was generally occupied by one and the same species. In one or two places near the summit, where the rock was broken in such a way as to present a series of little niches, the two species seemed to alternate in position, as if intentionally, they being evidently on terms of perfect friendship, while no differences could be detected in their habits or movements. The eggs — four in number — were of a more regular oval than those of *P. carbo*, but otherwise similar to them in appearance, the difference in size of the eggs of the two species being by no means proportioned to the difference in size of the birds themselves. At the time of Audubon's visit, none of the present species were seen at Wapitaguan, and he says that he found them breeding only on flat rocks. Four eggs selected by Dr. Bryant as typical of their variations in length and breadth give the following measurements: 2.26 by 1.36 inches; 2.13 by 1.51; 2.09 by 1.42; 2.20 by 1.45.

Captain Bendire in his visits to Lake Malheur, in Eastern Oregon, met with a large breeding-place of this Cormorant. Most of the nests were on the ground; about one third were on bushes not over three feet high; and the remainder on rubbish piles not more than six inches above the ground. The young birds when about two weeks old were still devoid of down or feathers, their skin being of a deep glossy black, and altogether presenting a very curious appearance. The eggs — usually five in number — are described as being of an elongated oval, pale green with chalky coatings, their average size being 2.42 by 1.48 inches. The nests were composed of coarse sticks, about fifteen inches in diameter, shallow, and lined with a few strips of bark and pieces of *tule*, and were usually raised a few inches above the ground, and placed close to the water. The birds began to lay about the 20th of April.

Eggs of this species (Smithsonian Institution, No. 12718) are of the usual glaucous-white color of eggs of this family, and measure from 2.30 to 2.55 inches in length, and from 1.40 to 1.45 in breadth. These were obtained by Mr. Donald Gunn at Shoal Lake. This Cormorant was also found breeding in the Selkirk Settlement by Mr. Gunn, and at Sitka by Mr. Bischoff.

Birds of this species which are resident in Florida were considered by Audubon to be specifically distinct from *dilophus;* but beyond a slight difference of size, they bear so close a resemblance to the more northern birds as to render it somewhat doubtful whether they can be separated even as a race. There are probably no very noticeable differences in the habits and movements of the two forms, other than what may be occasioned by the differences of conditions resulting from living in a partially tropical and a subarctic region. In the United States this bird is chiefly confined to the peninsula of Florida; a few are found on the Atlantic coast as far east as South Carolina, and along the coast of the Mexican Gulf as far west as the mouths of the Mississippi. On the southwest it seems to be replaced by *Phalacrocorax mexicanus.* It also occurs in Cuba, where it breeds, and probably in some others of the West India islands. It is also found on the Atlantic sea-coast of Central America. Mr. Salvin gives an account of having visited one of its breeding-places on the coast of Honduras. The nests were built on the outer boughs of the mangrove-bushes, some twelve feet above the water. These were very strongly constructed of sticks, hollowed considerably on the inside, and partly lined with freshly picked mangrove-leaves. The birds, at the time of his visit, were just depositing their eggs, and some nests had in them what appeared to be their full complement of four, while others had two or three, or only one. Mr. H. E. Dresser obtained examples of this species at Man-of-War Bay, on the Belize coast.

According to Audubon's observations in Florida, it is chiefly found about the shore, in bays, inlets, and large rivers, and was not seen far out to sea. It is at all seasons gregarious. So far as he noticed, it only nested on trees or bushes, and never on the ground. He visited its breeding-places, April 26, on several small Keys. On the branches of the mangroves a large colony, numbering several thousand pairs, had already built their nests, and were sitting on their eggs; and sometimes as many as ten nests were on a single tree.

The nest of this species is of a rather small size, it being only about nine inches in diameter, and it is formed of sticks crossing each other. The eggs varied greatly in dimensions, averaging 2.25 inches in length, and 1.42 in breadth. They are rendered rough by a coating of calcareous matter. The young at first are blind, and of a black color; and if approached when about a month old, they throw themselves into the water. When undisturbed, however they remain in their nest until they are able to fly. As soon as the birds are old enough to take care of themselves large numbers go to the inland streams and ponds for food. At this season some wander up the shore, going as far north as the Carolina coast, and others ascend the Mississippi to the Ohio, where individuals have been seen in October. It is, however, quite possible that Audubon may have confounded the *dilophus* with this form, especially as he was not aware of the fact that the former is frequently met with in the interior.

The flesh of *P. floridanus* is dark colored, of a rank taste, tough, and of a very fishy flavor. The young are eaten by the Indians and negroes, and are sold in the New Orleans market, and used by the poorer people for gumbo soup.

Eggs of this species in the Smithsonian Collection (No. 2949), obtained in Florida, at the Island of St. George's, by Dr. Bryant, have the chalky glaucous whiteness peculiar to all the eggs of this genus. Three specimens measure, 2.30 by 1.45 inches; 2.20 by 1.50; and 2.20 by 1.45.

Phalacrocorax mexicanus.

THE MEXICAN CORMORANT.

Carbo mexicanus, BRANDT, Bull. Sc. Acad. St. Petersb. III. 1838, 55.

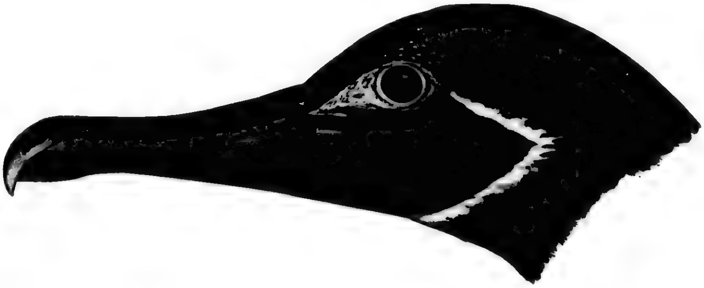
Graculus mexicanus, BONAP. Consp. II. 1855, 173. — COUES, Key, 1872, 203; Check List, 1873, no. 531; B. N. W. 1874, 588. — SNOW, Cat. B. Kansas, 1873, 12 (Lawrence, Kan., April 2, 1872; one specimen). — RIDGW. Bull. N. O. C. V. 1880, 31 (Cairo, Ill.).

Phalacrocorax mexicanus, RIDGW. Nom. N. Am. B. 1881, no. 644. — COUES, 2d Check List, 1882, no. 754.

Phalacrocorax lacustris, GUNDL. MSS. (LAWRENCE.)
Phalacrocorax resplendens, LEMB. Aves de Cuba. (Adult; not of AUDUBON.)
Phalacrocorax Townsendii, LEMB. t. c. (Young; not of AUDUBON.)

HAB. Mexico, Cuba, and Southern United States, north, in the Mississippi Valley, to Kansas and Southern Illinois, south to Honduras.

SP. CHAR. Smallest American species of the genus. Tail-feathers, 12. Bill moderately robust, the unguis arched and strongly hooked, the culmen slightly concave in the middle portion, and gently ascending basally. Bare skin of the face extending farthest back on the side of the head, forming quite an angle behind the rictus; feathers of the throat advancing forward to a little anterior to the rictus, the middle portion sometimes slightly indented by an obtuse angle of the naked skin of the gular sac. Scapulars and wing-coverts rather narrow and tapering, and nearly or quite pointed. *Adult (in full breeding-plumage?):* Gular sac bordered posteriorly by a line of white reaching upward nearly or quite to the eye. Head, neck, rump, and entire lower parts deep silky brownish black, with a very faint purplish-brown gloss in some lights; back, scapulars, and wings dark brownish-slaty, each feather narrowly bordered with black; primaries slate-black; tail uniform deep dull black, the shafts black. Superciliary region, sides of the neck, and anal region ornamented by a few short and narrow white filamentous feathers. Bill light colored (in skin), mottled with darker, the culmen dusky; gular sac brownish (orange-red in life?); iris green; legs and feet deep black. *Adult, in winter:* Similar to the above, but without the white filaments. *Young, first plumage:* Head, neck, and lower parts grayish umber-brown, becoming gradually darker, or nearly black, on the nape, sides, flanks, anal region, and crissum, and whitish on the upper part of the throat, next the gular pouch. Upper parts as in the adult. "Iris green; bill dark fleshy, culmen and upper part of lower mandible dusky; gular sac brownish; feet deep black" (SUMICHRAST, MS.). *Young, in winter:* Similar to the above, but throat, foreneck, jugulum, and breast much lighter colored — sometimes almost white.



Total length, 23.00–28.75 inches; extent, 38.00–42.75; wing, 9.95–10.40; tail, 6.75–8.30; culmen, 1.70–2.00; tarsus, 1.85–2.10; middle toe, 2.15–2.85.

This species does not in the least resemble the South American *P. brasilianus*,[1] which occurs as far north as Nicaragua. The latter is somewhat similar to *P. dilophus*, but is decidedly smaller than even southern specimens, and has the gular sac divided posteriorly along the middle line by an angular extension of the feathering of the throat.

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[1] PHALACROCORAX BRASILIANUS.
Procellaria brasiliana, GMEL. S. N. I. ii. 1788, 564 (based on *Puffinus brasilianus*, BRISS. Orn. VI. 1760, 138, sp. 4).
Haliæus brasilianus, LICHT. Verz. Doubl. 1823, 86, 908.
Graculus brasilianus, GRAY, Gen. B.
Carbo brasilianus, SPIX, Av. Bras. II. 1824, t. 106.
Zaramagullon negro, AZARA, Apunt. III. 1805, 395, 423.
Pelecanus vigua, VIEILL. Enc. Méth. I. 1823, 342.
"*Phalacrocorax graculus*, GOULD, B. Eur. t. 408" (STREETS).
Phalacrocorax niger, KING, Zool. Journ. IV. 1828, 101, sp. 68.
Carbo mystacalis, LESS. Traité, 1831, 604.

The Mexican Cormorant is a tropical species, and has but a limited claim to be counted as belonging to the North American fauna. It is common only on the southwestern portion of the coast of Texas, and also probably in the extreme southern portion of California; and is also of accidental occurrence within the interior portions of the United States. It is found on both coasts of Mexico, and is abundant on that of Yucatan, Honduras, Central America, and South America; it is also occasionally met with in the waters of the interior.

This species was taken on Lake Peten, in Honduras, by Mr. Layard; and Mr. G. C. Taylor met with it in the Lake of Yojoya, in the same region. Mr. Salvin, in his explorations among the creeks on the Pacific coast of Guatemala, observed individuals that were nesting on the branches of trees, while others were swimming in the muddy waters. Colonel Grayson mentions finding it everywhere common on the Pacific coast in the neighborhood of Mazatlan, in Western Mexico, but does not give any description of its habits. Dr. Burmeister appears to have met with it in large numbers throughout nearly all the La Plata Regions, and he speaks of seeing it everywhere, on the Rio Parana, and farther inland, on the lagoons and large ponds of the interior. Dr. J. W. Viele informs me that he found it abundant on the coast of Yucatan, where he met with it in large breeding communities, and obtained its eggs. He did not notice any specific peculiarities of habit by which it might be distinguished from the common *P. floridanus*. A single specimen was secured by Professor Frank H. Snow, of Lawrence, Kan.; it was taken four miles south of that city, April 2, 1872.

Mr. F. Germain ("Proc. Boston Nat. Hist. Soc." VII. 315) mentions this as one of the birds breeding in Chili, where its common name is *Yeco Cuervo*. It chooses as a place for its nest the rocks on the sea-coast, or trees which border certain lakes or pools, depositing its eggs in October and November, at which time birds of this species collect in great numbers. Their nests are made of marine or aquatic plants, which after a few days give forth an offensive smell; the number of eggs in each nest is three or four.

The observations of Mr. H. Durnford ("Ibis," 1878) confirm the fact of the distribution of this species over all South America. He met with it on the Sengel and Sengelen rivers, as well as on the Chupat, in Patagonia, where it was both resident and common. Every evening he observed large flocks ascending the River Chupat for a distance of many miles, the birds flying in from the sea to fish in the river during the night.

Mr. Dresser mentions finding this Cormorant common near Matamoras during the summer months; and he also saw at Galveston several birds which he recognized as being Cormorants, and which, as he thought, must belong to this species; but he did not succeed in procuring any specimens from that locality, although he received two from Fort Stockton. Both Dr. Merrill and Mr. Sennett mention the Mexican Cormorant as being a common summer resident near Fort Brown. The latter states that it was seen near the fresh-water lagoons up the river, as well as about the adjacent salt-ponds and marshes. He did not notice any as high up as Hidalgo; and although it undoubtedly breeds along the coast, none of its nests were found. The manuscript notes of the late Dr. Berlandier, of Matamoras, mention it as being common on the lakes or lagoons of the Gulf coast, and also as having been found on those of Tamiagua, Tuxpan, Puebla, Chairael del Carpentero, etc., and in the marshy places on the borders of the Rio Bravo del Norte, in the vicinity of Matamoras, and also along the coast of Texas.

Eggs in the Smithsonian Collection, procured in Cuba by Professor Poey, are, in all respects of color and shape, like those of all the species of this genus, the color being a glaucous white, with cretaceous incrustations. These eggs measure from 2.15 to 2.25 inches in length, by from 1.35 to 1.40 in breadth.

Phalacrocorax penicillatus.

BRANDT'S CORMORANT.

Carbo penicillatus, Brandt, Bull. Sc. Acad. St. Petersb. III. 1838, 55 (*patria ignota*).

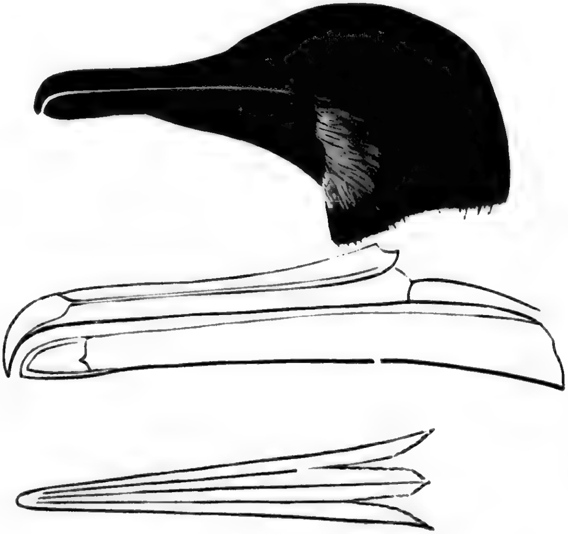
Phalacrocorax penicillatus, Heerm. Pr. Philad. Acad. VII. 1854, 178. — Ridgw. Nom. N. Am. B. 1881, no. 645. — Coues, 2d Check List, 1882, no. 754.

Urile penicillatus, Bonap. Consp. II. 1855, 175 (part).

Graculus penicillatus, Gray, Gen. B. III. 1845, 668. — Lawr. in Baird's B. N. Am. 1858, 880. — Baird, Cat. N. Am. B. 1859, no. 626. — Coues, Key, 1872, 304; Check List, 1873, no. 532.

Phalacrocorax Townsendi, Aud. Orn. Biog. V. 1839, 149; Synop. 1839, 304; B. Am. VI. 1843, 438, pl. 418 (=young).

Hab. Pacific coast of North America, from Cape St. Lucas to Washington Territory.



Sp. Char. Tail-feathers, 12. Feathers of the throat forming an acute angle anteriorly, those on the malar region forming a shorter angle, extending nearly to the base of the mandible; bill narrower than deep, the maxillary unguis not arched, but slender and decidedly hooked, the culmen gently ascending basally; both maxilla and mandible marked with numerous fine longitudinal sulcations. *Adult, in full breeding-plumage:* Head, neck, and rump soft glossy blue-black, or dark indigo-blue, passing insensibly into soft dark bottle-green on the lower parts; forehead less lustrous and more brownish; scapulars and wing-coverts dark dull greenish, each feather narrowly and rather indistinctly bordered with black. Feathers adjoining the base of the gular sac pale fawn- or isabella-color (sometimes brownish white), forming a somewhat crescentic patch on the upper part of the throat, extending up on each side to the rictus. On each side of the neck, commencing behind the brownish gorget, and continued downward for a greater or less distance, long, rather rigid, hair-like filamentous feathers of brownish white or pale straw-color; anterior part of the scapular region adorned with similar but broader filaments. Bill grayish dusky; gular sac blue; iris green; legs and feet deep black. *Adult, in winter:* Similar to the above, but white filamentous feathers entirely absent. *Young, first plumage:* Head, neck, and rump dark silky fuliginous, nearly black on the nape; back, scapulars, and wing-coverts blackish dusky, the feathers bordered with light grayish brown; upper part of the throat and median lower parts pale fawn-color; jugulum, breast, sides, and flanks raw-umber brown. "Bill yellow, with the edge brown; gular sac and bare skin about the eyes orange" (AUDUBON).

Seven specimens examined, the measurements being as follows: Wing, 10.50–11.75 inches (average, 11.28); tail, 5.50–6.50 (5.93); culmen, 2.60–2.95 (2.80); tarsus, 2.40–2.75 (2.58); middle toe, 3.50–3.80 (3.63).

This species, described by Audubon under the name of Townsend's Cormorant, had previously been given by Gray as Brandt's Cormorant, and is, so far as we are aware, confined to the Pacific coast of North America. We have no descriptions of its habits or movements warranting us in supposing that these differ in any essential respect from the habits of the other birds of this well-characterized genus, the various species of which conform in all cases very closely to a certain uniform mode of living and nesting, and which agree in all other respects except specific in their markings and their geographical distribution. It appears to be restricted to the coast of California, Oregon, and Washington Territory. The examples described by Audubon were given him by Mr. Townsend, who obtained them at Cape Disappointment, in October, 1836.

Mr. Henshaw states that this Cormorant is found upon the Farallon Islands in the summer, and that it undoubtedly breeds also in the Santa Barbara Group, although he was not quite positive in regard to its presence on Santa Cruz in June. A number of birds of this species were also taken on San Miguel Island by Captain Forney.

Dr. Cooper's observations enable him to state that this is by far the most abundant species on the coast of California, and that it is supposed to extend very far to the north, beyond San Francisco, and also to an unknown distance in the opposite direction. He found it abundant at San Diego during the winter, and in flocks of several hundreds, which sometimes frequented the Bay, and at other times flew off to the outside waters to fish, moving in long straggling companies. This bird is also met with in abundance all the year round at San Francisco, and about the mouth of the Columbia River. Dr. Cooper saw a few of this species among the Southern Islands during the summer months; but he did not find any of their nests. They build in large numbers on the Farallon Islands, their nests and eggs being much like those of the other species of this genus; the principal difference being that the eggs of this species are rather more incrusted with a calcareous coating. Dr. Cooper gives as their average measurements 2.45 inches in length, and 1.52 in breadth. This bird has nothing peculiar in its mode of fishing, except that it is rather more gregarious than the others are. It is said to have its full share of the stupidity supposed to be common to this family. Hence it is not infrequently found flying on board steamboats and other vessels, although at times it appears to be very suspicious. At San Diego large numbers of this Cormorant were found putting on their mature plumage; and this process appeared to be dependent on a change in the color of their feathers, rather than one resulting from the usual process of moulting.

Eggs of this species in the Smithsonian Institution collection (No. 10055), from the Farallon Islands, collected by Mr. Hepburn, measure from 2.20 inches to 2.45 in length, and from 1.45 to 1.55 in breadth.

Phalacrocorax pelagicus.

a. Pelagicus. THE ALEUTIAN VIOLET-GREEN CORMORANT.

Phalacrocorax pelagicus, PALL. Zoog. Rosso-As. II. 1826, 303, pl. 76.

Graculus Bairdii, DALL, Avifauna Aleutian Islands from Unalashka westward, 1874, p. 6 (not of COOPER).

b. Robustus. THE ALASKAN VIOLET-GREEN CORMORANT.

Graculus violaceus (part), LAWR. in Baird's B. N. Am. 1858, 881. — BAIRD, Cat. N. Am. B. 1859, no. 627. — COUES, Key, 1872, 305; Check List, 1873, no. 535.

Phalacrocorax violaceus, RIDGW. Nom. N. Am. B. 1881, no. 646. — COUES, 2d Check List, 1882, no. 758.

Phalacrocorax pelagicus robustus, RIDGW. MS.

c. Resplendens. THE VIOLET-GREEN CORMORANT; BAIRD'S CORMORANT.

Phalacrocorax resplendens, AUD. Orn. Biog. V. 1839, 148; Synop. 1839, 304; B. Am. VI. 1843, 430, pl. 419.

Phalacrocorax violaceus resplendens, RIDGW. Nom. N. Am. B. 1881, no 646 *a*. — COUES, 2d Check List, 1882, no. 759.

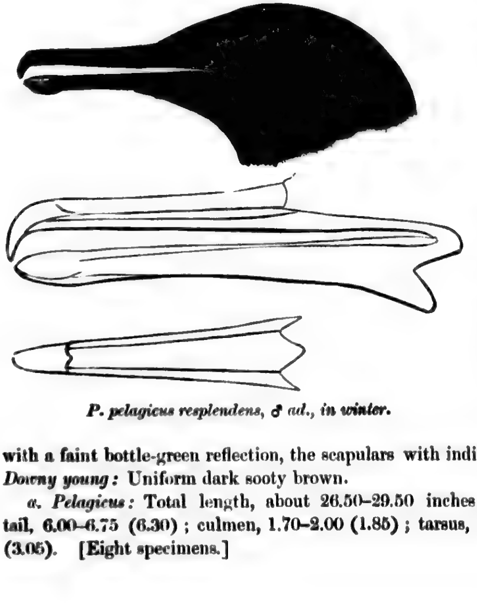
Graculus Bairdii, "GRUBER, MSS." COOPER, Pr. Ac. Nat. Sci. Philad. Jan. 1865, 5 (Farallon Islands, coast of California).

Graculus violaceus, var. *Bairdii*, HENSHAW, Orn. Wheeler's Exp. 1876, 276 (Santa Cruz I., Cal.; June).

White-patch Cormorant, COOPER, l. c.

HAB. Pacific coast of North America, from Alaska to California. True *pelagicus* restricted to the Aleutian Islands, Kamtschatka, Kuriles, and (in winter) Japan; *robustus* to the coast of Alaska, from Norton Sound to Sitka; and *resplendens* to Washington Territory, and southward as far as Cape St. Lucas and Mazatlan.

SP. CHAR. Tail-feathers twelve. Forehead feathered down to the base of the culmen. *Adult:* Head and neck rich silky metallic violet, the pileum and lower part of the neck more blue; back, rump, and entire lower parts rich silky metallic bottle-green; scapulars and wing-coverts similar, but tinged with purplish-bronze; primaries and tail dull black. *In the breeding-season*, the neck, lower back, and rump adorned with narrow white filamentous feathers, and the flanks covered with a large patch of pure white; pileum with two erectile flattened tufts of broad, rather loose-webbed feathers — one tuft on the forehead, the other on the occiput. Bill dusky; gular sac and naked lores reddish brown or coral-red; iris light green; legs and feet deep black. *In winter*, the white filamentous feathers of the neck and rump, and the white flank-patches entirely absent; the tufts of the head absent, or but slightly developed. *Young:* Uniform brownish dusky, lighter (nearly brownish gray) on the head, the upper parts darker and glossy, with a faint bottle-green reflection, the scapulars with indistinct dull black borders. Iris brown. *Downy young:* Uniform dark sooty brown.



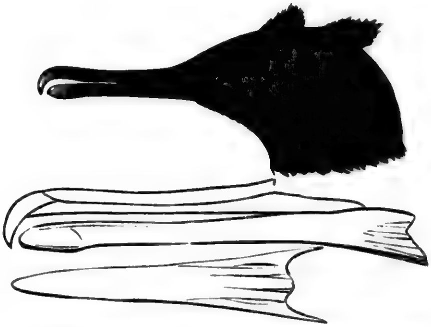
P. pelagicus resplendens, ♂ *ad.*, *in winter*.

a. Pelagicus: Total length, about 26.50–29.50 inches; wing, 9.50–10.60 (average, 10.10); tail, 6.00–6.75 (6.30); culmen, 1.70–2.00 (1.85); tarsus, 1.90–2.15 (2.02); outer toe, 2.80–3.30 (3.05). [Eight specimens.]

b. Robustus: Wing, 10.00–11.40 inches (average, 10.80); tail, 6.25–8.50 (7.00); culmen, 1.70–2.10 (1.95); tarsus, 1.95–2.45 (2.16); outer toe, 3.00–3.50 (3.26). [Eleven specimens.]

c. Resplendens: Total length, 25.50–29.00 inches; extent, 39.10–43.50; wing, 9.30–10.50 (average, 9.79); tail, 5.80–7.00 (6.30); culmen, 1.65–2.00 (1.81); tarsus, 1.80–2.15 (1.95); outer toe, 2.90–3.40 (3.04). [Fifteen specimens.]

The Violet-green Cormorant was first described as a North American bird by Audubon from a specimen obtained by Mr. Townsend at Cape Disappointment, near the mouth of Columbia River. It is said to be the most beautiful of the family found within the limits of the United States. This species appears to have very nearly the same distribution as *G. penicillatus;* but it is a somewhat more northern species. Mr. Dall speaks of it as being very common at Sitka and at Kadiak, where specimens were obtained by Mr. Bischoff. It is also said to be abundant at St. George's Island, in Behring's Sea, where Captain Smith obtained several examples. It was also found on the coast of Vancouver Island by Mr. R. Browne.



P. pelagicus resplendens: Female adult, summer plumage.

Dr. Cooper writes that the original locality where this beautiful species was first discovered — namely, Cape Disappointment, near the mouth of the Columbia — was also the place where he first met with it, in 1854. The locality is very difficult of approach, on account of the heavy surf constantly breaking upon the rocky shore, and it was not without danger that he secured his specimen. At the same time he also noticed there the *penicillatus* and another Cormorant, which he supposed to be the adult of *P. pelagicus,* and which had its flanks marked with a large patch of white. This, he thinks, must have been the same bird referred to by Townsend and Audubon as *P. leuconotis,* and seen by the former at Cape Disappointment.

Mr. Dall refers to this species as being resident in the Aleutian Islands. It was common on the rocks in the outer bay at Unalashka, but seldom approached the harbor. He describes it as occurring in large flocks, and appearing to be of a very inquisitive disposition — flying around the boat when the party was employed in sounding, and uttering at intervals a shrill cry. He also found this species abundant at the Shumagins.

Eggs of this Cormorant in the Smithsonian Collection (No. 12858), obtained at Sitka by Mr. Bischoff, measure 2.25 by 1.45 inches, and are in all respects undistinguishable from the eggs of the other species of this peculiar genus.

Mr. Dall, in his Report on the Avifauna of the Aleutian Islands west of Unalashka, mentions this species as a resident of the Aleutian Islands. Specimens from Kyska, procured July 8 — females — had the iris brown, and naked membrane somewhat carunculated and of a coral-red; the mandible nearly black. Others from Amchitka, July 26, had a dark-green iris and a similarly-colored gular sac. One obtained in 1872, at Unalashka, had a dark, nearly black, iris, with the gular sac flesh-colored, passing into ashy gray above. All the birds seen appeared to possess small white feathers scattered through the plumage in the breeding-season; but Mr. Dall is not sure that the white thigh-patches are always of this character. There appears to be some variation in the shade of green of the plumage: in some specimens it is much more rusty than in others.

Mr. H. W. Henshaw states that this bird occurs in large numbers all along the coast of Southern California, and that it probably extends its range northward into Oregon. He saw many of this species in May in San Francisco Bay, and found them congregated in great numbers on the islands in Santa Barbara Channel — most of the places selected as nesting-sites being inaccessible. At low tide he succeeded in entering one of the gloomy caverns, where a dozen pair had established themselves. The nests were merely collections of weeds and sticks matted together, and placed upon the rocky shelves sufficiently high to be out of the reach of the tide. This was on the 4th of June, and all the nests contained young in a downy state. The old birds all forsook the place, and flew wildly about the entrance, but without attempting to re-enter, though the young birds kept up a continuous vociferous calling. In flying about the island the old birds passed within easy gunshot of the rocky points, but never ventured over the land. The constant habit of this species is to spend the morning in fishing; and then, having appeased its hunger, to sit in groups on the cliffs which immediately overhang the sea — often in such numbers as to blacken the rocks. When disturbed, those nearest to the edge drop into the water; while those in the rear scramble forward in the most awkward manner, and having made the plunge, swim beneath the surface until they have gained a safe distance.

Eggs of this bird in the Smithsonian Collection (No. 2035, obtained by Dr. Canfield on the coast of California; and No. 6156, taken on the Farallones by Mr. Gruber) vary from 2.20 to 2.25 inches in length, and from 1.35 to 1.45 in breadth; and are not distinguishable by any specific characteristics from the eggs of any other species of Cormorants.

Phalacrocorax urile.

THE RED-FACED CORMORANT.

Red-faced Cormorant, or *Shag*, PENN. Arct. Zool. II. 1785, 584 (Kamtschatka). — LATH. Synop VI. 1785, 601.

Pelecanus urile, GMEL. S. N. I. 1788, 575. — LATH. Ind. Orn. II. 1790, 888.

Phalacrocorax urile, BONAP. Compt. Rend. XLII. 1856, 766 (part).

Phalacrocorax bicristatus, PALL. Zoog. Rosso-As. II. 1826, 301, pl. 75, fig. 2. — RIDGW. Nom. N. Am. B. 1881, no. 647. — COUES, 2d Check List, 1882, no. 757.

Graculus bicristatus, GRAY, Gen. B. III. 1845. — BAIRD, Tr. Chicago Ac. I. 1869, 321, pl. 33. — COUES, Key, 1872, 304; Check List, 1873, no. 534; in Elliott's Alaska, 1875, 192 (Pribylof Islands).

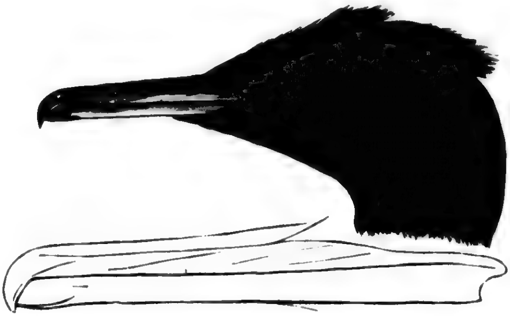
Urile bicristatus, BONAP. Consp. II. 1855, 175 (part).

HAB. Prybilof, Aleutian, and Curile Islands, and coast of Kamtschatka. (Said to occur also in Japan and Formosa.)

SP. CHAR. Similar to *P. pelagicus*, but slightly larger, and the base of the culmen crossed by a strip of naked skin, connecting that of the lores. *Adult, in full breeding-plumage:* Head and neck deep silky steel-blue (much less purplish than in *pelagicus*), the tufts dull silky brownish bottle-green or bronzy-purplish; lower parts silky metallic bottle-green; scapulars and sides of the back silky dark metallic violet-purple (much more purple than in *pelagicus*); middle of the back (longitudinally), dark bronzy green; rump and upper tail-coverts similar to the lower parts; wings similar to the scapulars, but duller, the lesser coverts more bronzy. Primaries brownish black; tail deep dull black. Flanks covered by a large patch of silky white filamentous feathers. Neck and rump with scattered, linear, filamentous pure white feathers (soon cast). Maxilla dusky, the base, as well as that of the mandible (which is light-colored) bright blue (in life); bare skin round base of bill, light scarlet; legs and feet deep black; iris light green. *Adult, in winter:* Similar, but without the white flank patches or filamentous feathers on neck and rump. *Young:* Uniform brownish dusky, with a faint purplish cast, the upper parts darker and more glossy. "Base of mandibles dull ashy blue, with a narrow orange stripe around it, but the borders of the naked membrane ill-defined" (W. H. Dall, MS.); iris brown; legs and feet black. *Downy young:* Uniform sooty grayish brown.

Total length, about 33 to 35 inches; extent, 48; wing, 10.50–11.60 (10.94); tail, 6.30–8.00 (7.25); culmen, 2.05–2.30 (2.16); tarsus, 1.75–2.50 (2.17); outer toe, 3.10–3.70 (3.44). [Fifteen specimens measured.]

This species is very similar to *P. pelagicus*, but may be readily distinguished, at all ages, by the strip of naked skin across the base of the culmen, the same region being covered by the frontal feathers in *P. pelagicus*. The colors of the adult are also quite appreciably different, the neck being less purple, while the scapulars are decidedly more so; the lower parts are rather more bronzy than in *pelagicus*.



This appears to be a species peculiar to the North Pacific region, occurring on the Asiatic coast from Kamtschatka to Formosa, and Japan. On the American shore it has not been met with south of Alaska; but it is said to be abundant on the coast of Japan, where specimens were obtained in March, 1865, by Mr. H. Whitely near Hakodadi ("Ibis," 1867).

Mr. Dall found it abundant on the Island of St. George, where he obtained specimens, and whence its eggs have since been procured. The colors reflected from its feathers during life are said to be very brilliant, and the skin near the eye passes from bright crimson, near the bill, to a bright bluish purple toward the feathers.

Mr. Henry W. Elliott met with this species in great abundance through the whole year on the Prybilof Islands, it being — as he states — the only one of its tribe visiting that group of islands. The terrible storms occurring in February and March are not sufficient to drive it away from the sheltered cliffs, while all other species — even the Great Northern Gull (*L. glaucus*) — depart for the open water south. This species resorts to the cliffs to make its nest, and is the earliest of the sea-birds to appear in that region. Two eggs were taken from a nest on the reef at St. Paul's Island, June 1, 1872 — a date over three weeks in advance of the breeding of almost all the other Water Fowl. The nests were large, carefully rounded up, and built upon some jutting point, or on a narrow shelf, along the face of a cliff or bluff. In their construction sea-ferns (*Sertularidæ*), grass, etc., are used, together with a cement made largely of the excrements of the bird itself.

The eggs are usually three in number — sometimes four — and very small, as compared with the size of the bird. They are oval, of a dirty whitish-gray green and blue color, but soon become soiled; for although its plumage is sleek and bright, the bird itself is exceedingly slovenly, and filthy about its nest. The young come from the shell after three weeks' incubation, without feathers, and almost bare even of down. They grow rapidly, being fed by the old birds, who in doing this eject the contents of their stomachs — such as small fish, crabs, and shrimps — all over and around the nest. In about six weeks the young Cormorant can take to its wings, being then as large and heavy as are the parent birds; but it is not until the beginning of its second year that it has the bright plumage and metallic gloss of the adult, wearing during the first year a dull drab-brown coat, with the brilliant colors of the base of the bill and gular sac subdued.

The Red-faced Cormorant is said to be a very bold and inquisitive bird, uttering no sound whatever, except when flying over and around a boat or ship — objects which seem to have a magnetic power of attraction for this bird. When it is hovering and circling around in this way, it is occasionally heard to utter a low droning croak. This cannot be called a bird of graceful action, either on the wing or on the shore. Its flight is performed by means of a quick beating of the usually more or less ragged wings, the neck and head being stretched out horizontally to their full length. This is an exceedingly inquisitive bird; as it flies around a boat or ship again and again in order to satisfy its curiosity, but never alights, although sometimes coming close enough to them to be touched by the hand. In the brilliancy and beauty of its plumage this species cannot be surpassed, or even equalled, by any bird found in the Behring Sea. It fairly shimmers, when in the sunlight, with deep bronze and purple reflections as though clothed in steel armor. In its stomach are found invariably, together with the remains of small fish, a coil of worms (*Nematoda*).

As, however severe the weather may be, this Red-faced Cormorant may be seen during the whole winter perched on the sheltered bluffs, the natives regard it with a species of affection, since it furnishes the only source of supply which they can draw upon at that season for fresh meat, soups, and stews, always wanted by the sick; and were these Cormorants sought after throughout the year as they are during the short spell of intensely bitter weather that occurs in severe winters, when the other Water Fowl are driven away, this species would be certainly and speedily exterminated. It is seldom shot, however, when anything else can be obtained. Quite a large number of its eggs were brought to Washington in the collections of Mr. Elliott. They, like all other eggs of the birds of the genus, are covered with white chalky incrustations of a varying thickness, and with great irregularity of surface, the underlying shell having a pale bluish or greenish tinge. The eggs also vary somewhat in size and in shape; but all are very much elongated, measuring 2.50 inches in average length, and 1.50 in breadth. They are of very nearly equal size at either end, and are more or less stained — a natural result of the filthy condition of the nest.

Eggs of this species in the Smithsonian Collection (No. 16324, obtained by Mr. H. W. Elliott on St. Paul's Island) are of a glaucous white color, with incrustations of a chalky whiteness. Five eggs selected as typical of the variations in size and shape present the following measurements: 2.30 by 1.55 inches; 2.35 by 1.55; 2.45 by 1.55; 2.50 by 1.50; 2.55 by 1.50.

Phalacrocorax perspicillatus.

PALLAS'S CORMORANT.

Phalacrocorax perspicillatus, Pall. Zoog. Rosso-As. II. 1826, 305. — Gould, Zool. Voy. Sulphur, 1844, 49, pl. 32. — Bonap. Consp. II. 1855, 167 — Ridgw. Nom. N. Am. B. 1881, no. 648. — Coues, 2d Check List, 1882, no. 756.

Graculus perspicillatus, Lawr. in Baird's B. N. Am. 1858, 877. — Baird, Cat. N. Am. B. 1859, no. 621. — Coues, Key, 1872, 304; Check List, 1873, no. 533.

Hab. Behring's Island; possibly in some of the westernmost islands of the Aleutian chain.

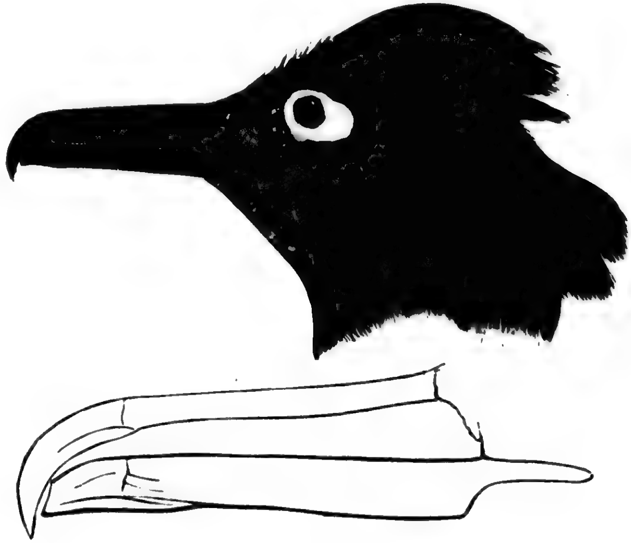
Sp. Char. Somewhat like *P. urile*, but very much larger, and the nuptial plumes scattered over entire head and upper neck. *Adult, in perfect breeding-dress:* "Face and crest deep rich shining purple; neck deep greenish blue; the face and upper part of the neck ornamented with some thinly-dispersed, long, narrow, hair-like, straw-colored feathers; body above and beneath deep glossy green; scapulars and wings deep purple, primaries and tail black, the latter with white shafts; on each side of the abdomen, at the insertion of the leg, a large patch of white; bill blackish hair-color, lighter at the tip; naked part of the throat, corners of the mouth, and naked skin of the orbits apparently rich orange.

"Total length, 36.00 inches; bill, 4.00; tail, 9.00; tarsi, 3.00.

"*Hab.* Russian America.

"Nearly allied to, if not identical with, but differs from, the *Pelecanus urile* of LATHAM in its much larger size, and in the ornamental plumes being dispersed over the face and sides of the neck, instead of on the front of the latter only" (GOULD).

This species still remains unknown in American collections. It evidently belongs to the same group as *P. urile* and *P. pelagicus*, but is very much larger even than the former, and otherwise different.



Pallas's description, in some respects more precise than the preceding, is as follows:—

"Size of the largest Goose. Form of the preceding [*P. pelagicus*], which also has pure white spots on the flanks. Body entirely black. Thin white, rather long, and narrow feathers hanging about the neck, as in *Ardea*. Occiput with an enormous erectile tuft. Around the base of the bill a naked skin varied with vermilion, blue, and white, as in the Turkey. About the eyes a kind of 'spectacles' of thick white skin, six lines broad. Weight, twelve to fourteen pounds. Female smaller, without the crest and spectacles.

"This species Steller observed nowhere but in the island named after the unfortunate Bering, where he lived shipwrecked. There they are very common; but never go to the shores of Camtschatka. As it exceeds its relatives in size, it also exceeds them in stupidity. It is a very ridiculous-looking bird, on account of the eye-rings, which, so to speak, represent spectacles, and its habit of making clown-like contortions of the neck and head."

It seems probable that this fine bird must now be ranked among the extinct species. Dr. Leonhard Stejneger, who spent two years on Behring Island, and made diligent search for it, writes thus concerning it (cf. Proc. U. S. Nat. Mus. vol. 6, 1883, p. 65): "It is not to be doubted that the *Phalacrocorax perspicillatus* does not occur on the islands at present. The natives, however, remember very well the time when it was plentiful on the rocks, especially on the outlying islet, Are-Kamen. About thirty years ago, they say, the last ones were seen; and the reason they give why this bird has become exterminated here on the island is, that it was killed in great numbers for food. They unanimously assert that it has not been seen since; and they only laughed when I offered a very high reward for a specimen."

We know of only three examples of this bird in museums — one in St. Petersburg, one in the British Museum, and one in Leyden.

FAMILY PLOTIDÆ. — THE ANHINGAS.

CHAR. Bill slender, pointed, compressed, and very Heron-like in shape, the culmen and commissure almost straight, the gonys slightly ascending; terminal half of the tomia finely serrated, the serrations directed backward, and forming a series of close-set, sharp-pointed, fine bristly teeth; nostrils obliterated. Head small, neck slender and greatly elongated (nearly as long as the wing); outer toe about as long as the middle, or slightly shorter. Tail very long, fan-shaped, rounded, the feathers widened toward the ends, the outer webs of the intermediæ in fully adult birds transversely corrugated or "fluted."

This singular family consists of but one genus, *Plotus*, which has a representative in the warmer parts of each of the great divisions of the earth.

GENUS **PLOTUS**, LINNÆUS.

Plotus, LINN. S. N. I. 1766, 218 (type, *P. anhinga*, LINN.).

CHAR. The same as those of the family (see above).

Only one species of this genus occurs in America. This is represented in Africa by the *P. Levaillantii*, LICHT.; in India by *P. melanogaster*, GMEL.; and in Australia by *P. novæ-hollandiæ*, GOULD. They all closely resemble *P. anhinga*, but are quite distinct.

Plotus anhinga.

THE AMERICAN ANHINGA; SNAKE-BIRD.

Plotus anhinga, LINN. S. N. I. 1766, 580. — NUTT. Man. II. 1834, 507. — BONAP. Consp. II. 1855, 180. — AUD. Orn. Biog. IV. 1838, 136; Synop. 1839, 306; B. Am. VI. 1843, 443, pl. 420. — LAWR. in Baird's B. N. Am. 1858, 883. — BAIRD, Cat. N. Am. B. 1859, no. 628. — COUES, Key, 1872, 306; Check List, 1873, no. 536; 2d ed. 1882, no. 760. — RIDGW. Nom. N. Am. B. 1881, no. 649.

Plotus melanogaster, WILS. Am. Orn. IX. 1824, 79, 82, pl. 74 (not of GMEL.).

HAB. Tropical and Subtropical America; Gulf States and Lower Mississippi Valley, north to the mouth of the Ohio.

SP. CHAR. *Adult male, in full breeding-plumage:* Plumage of the neck and body deep glossy black, with a faint greenish gloss; scapulars and lesser wing-coverts marked centrally (longitudinally) with light hoary ash, these markings elliptical on the upper part of the scapular region, linear or nearly acicular on the longer scapulars, and broadly ovate on the wing-coverts; exposed surface of the middle and greater wing-coverts light hoary ash; remainder of the wings, with the tail, deep black, the latter less glossy, and broadly tipped with pale brown, passing into dirty whitish terminally. Sides of the occiput and neck ornamented by lengthened, loose-webbed, hair-like feathers of dirty white or pale grayish lilac; nuchal feathers elongated, hair-like, forming a sort of loose mane. "Upper mandible dusky-olive, the edges yellow; lower mandible bright yellow, the edges and tip greenish; bare space about the eye bluish green; gular sac bright orange; iris bright carmine; tarsi and toes anteriorly dusky-olive, the hind parts and webs yellow, claws brownish black" (AUDUBON). *Adult male, in winter:* Similar to the above, but destitute of the whitish feathers of the head and neck. *Adult female, in full breeding-plumage:* Head, neck, and breast grayish buff, becoming grayish brown (sometimes quite dusky) on the pileum and nape, the breast lighter, and bounded below by a narrow band of dark chestnut, bordering the upper edge of the black of the abdomen; sides of the upper part of the neck adorned with an inconspicuous longitudinal stripe of short white loose-webbed feathers. Rest of the plumage as in the male. Bill, etc., colored much as in the male, but iris paler red (pinkish). *Young, in first winter:* Similar to the adult female, but lower parts duller black (the feathers usually indistinctly tipped with grayish brown), the chestnut pectoral band entirely absent; upper parts much duller black (the back decidedly brownish), the light markings much smaller and more indistinct. *Young, first plumage:* Similar to the above, but entire lower parts light grayish buff, darker posteriorly. Transverse corrugations of the middle rectrices quite obsolete. *Nestling:* Covered with buff-colored down (AUDUBON).

P. anhinga.

Total length, about 34.00 to 36.00 inches; extent, 43.00 to 44.00; wing, 14.00; tail, 11.00; bill, 3.25; tarsus, 1.35.

The Australian *P. novæ-hollandiæ* resembles very closely the American species in the details of form, in size, and in general coloration. The chief difference between the adult males of the two species consists in the possession of a white stripe on the side of the head in *P. novæ-hollandiæ*, commencing near the rictus and extending backward, growing gradually narrower, and terminating in a point on the upper part of the neck; the gular sac is likewise bordered with a white line. In *P. anhinga* the head is wholly deep black, excepting, of course, the nuptial plumes, which are present only during a portion of the breeding-season. In the Australian bird the front part of the neck is light brownish, and the light-grayish markings of the wings narrower and less handsome.

The "Snake Bird," or "Darter," is found occupying a somewhat restricted area within the limits of the United States. It occurs in South Carolina and in all the States bordering the Gulf of Mexico, from Georgia and Florida to the Rio Grande. I am not aware that it has ever been seen on the Pacific coast within the limits of the United States, although it is found in Mexico and in Central America, on the Atlantic as well as on the Pacific coast. It also occurs in all the northern portions of South America, wherever there are rivers of considerable size.

Mr. Dresser found it common on all the large streams of Texas, having obtained specimens from Fort Stockton and from the Medina River. It is equally abundant on all the rivers of Tamaulipas and the other Gulf regions of Eastern Mexico, as well as on the western side of that country. Mr. Bischoff obtained examples of this species near Mazatlan; and Colonel Grayson found it common on the fresh-water lagoons, and on the Mazatlan and Santiago rivers. It was also seen in large numbers in the small river of Tepic and on Lake Chapala, near Guadalajara. In that region it is a constant resident, and builds its nests in trees near, or over, fresh-water lagoons or streams. It is found in nearly all the principal islands of the West Indies, although Mr. Gosse does not include it among the birds of Jamaica. It is abundant and a resident in Cuba, where Dr. Gundlach saw it breeding, and obtained its eggs. Léotaud includes this species among the birds of Trinidad — where, however, it is not very common, and where it keeps in the trees bordering the streams which flow through the low swampy meadows. It lives principally upon fish, which it seizes by rapidly darting upon them with its sharply pointed and slightly toothed beak. In this movement its neck, which is very long, is thrust forward with the force of a spring, aided by the muscles, that are large and well developed in the lower and anterior portion of the neck. These muscles are said to be white, tender, and of an agreeable flavor; while those of the body are of a dark color, and have a disagreeable taste. When fishing, the Anhinga stands with only its head and neck above the water. When it makes a plunge it remains a long while beneath the surface; and when it rises again, the long and undulating neck has somewhat the appearance of a serpent. Léotaud was unable to state with certainty whether the Anhinga is or is not a resident species in Trinidad, or whether it occurs there only in its migrations.

This bird was found at Lake Peten, Honduras, by Mr. Leyland; and Mr. G. C. Taylor met with several individuals of this species on the Lake of Yojoya, in the same region. Mr. E. C. Taylor mentions seeing a number of them on the Orinoco. He generally found them perched on the stump of a tree overhanging the river, ready at the shortest notice to plunge into the water.

Mr. C. Barrington Brown speaks of meeting with this bird in his descent of the Paruni River, in British Guiana, where its local name is "Duckler."

Mr. N. B. Moore studied the movements of this species in Florida, and ascertained that it does not fish exclusively in fresh water. He repeatedly saw it diving in the waters of a bay or creek between two oyster-bars, where the tide ebbed and flowed daily. He never knew it to fly with its wings directly extended, or with its neck stretched to its full length, but always with the neck folded upon itself, as is the case with the Herons; but in the Anhinga the folds are shorter, so that a greater length of the neck is extended in front of them. There is a moment during the expansion of the wings when the neck may be seen fully extended; this is when the bird quits its perch. So suddenly is the neck folded in this movement, and so unlike is this action to that of Herons when getting on wing, that a wrong inference has been drawn in regard to the position of the Anhinga's neck when that bird is on the wing.

In a subsequent letter Mr. Moore again repeats his observations as to the fishing of this species in salt water in localities where there is a constant ebb and flow of the tide. The bird seemed to him to delight to forage in water of an obstructed nature, no matter whether fresh or salt, as it very rarely resorted to the open water of the bay or to the mouths of creeks, to obtain its prey by a clear chase, instead of taking it by surprise.

Audubon states that he has known a few birds of this species extend their migrations in spring as far to the north as North Carolina, where they breed near the coasts. They go up the Mississippi to Natchez; and are there known to the Creoles by the name of *Bec à Lancette.* At the mouth of that river they are called by the fishermen the "Water Crow," and in Florida the "Grecian Lady." To some persons this bird is known as a Cormorant. In Carolina it is the "Snake-bird," and the male is termed the "Black-bellied Darter."

It was found by Mr. Kennicott to be common in the vicinity of Cairo, Ill., in 1855, and was also seen in the same locality by Mr. Nelson in 1875.

These birds, in their migrations, move northward in April, and return to the borders of the Gulf in November, where many are resident throughout the year. Audubon never happened to meet with this bird when it was feeding in salt water, but has generally found it in still water, and in such secluded places as were abundantly supplied with fish.

Audubon never saw the Anhinga plunge or dive for its prey from an eminence. It is more or less gregarious by habit, the number seen together varying with the attractions of the locality, and ranging from eight or ten to thirty, or even several hundred. In the breeding-season it moves in pairs. It is a diurnal bird, and if unmolested, returns each night to the same roosting-place. When asleep it is said to stand with its body almost erect. In rainy weather it often spends the greater part of the day standing erect, with its neck and head stretched upward, remaining perfectly motionless, so that the water may glide off its plumage. The roosting-place of the Anhinga is generally over water, often in the midst of some stagnant pool.

This is said to be the very first among fresh-water divers, disappearing beneath the surface with the quickness of thought, leaving scarcely a ripple on the spot, and reappearing, perhaps with its head only above the water for a moment, at a place several hundred yards distant. If hit, and only wounded, this bird readily baffles all the endeavors of the sportsman to secure it. When swimming, and unmolested, it is buoyant, and moves with its whole body above the water; but when in danger it sinks its body, leaving only the head and neck out of the water, presenting the appearance of a portion of a large snake.

Rev. Dr. Bachman, of Charleston, S. C., kept one in confinement until it became quite tame. This bird had the curious habit of diving under any substance floating on the surface of the water, such as rice-chaff. When swimming beneath the surface of the water, the Anhinga spreads its wings partially, keeps its tail expanded, and uses the feet as paddles either simultaneously or alternately. When taken young it is content in its state of domestication; and even though left at full liberty to fish for itself, returns to its home at night to roost.

The nests of the Anhinga are variously placed — sometimes in a low bush; on the common smilax, at an elevation of only a few feet; or on the upper branches of a high tree; but always over the water. They are sometimes alone, at other times surrounded by hundreds of nests of various species of Herons. The nest of the Anhinga is about two feet in diameter, and of a flattened shape. The foundation is made of dry sticks laid crossways, so as to enclose a circular space. The inner part of the nest — which is solid and compact — is made up with branches and leaves of the common myrtle, Spanish moss, and slender roots. The number of eggs is usually four, and never more than this number. The same nest is frequently used several seasons in succession.

Audubon describes the eggs as measuring 2.63 inches in length by 1.25 in breadth, as being of an elongated oval form, of a dull uniform whitish color externally, and as covered with a chalky substance, beneath which the shell is of a light blue, resembling the eggs of the different species of Cormorants. The young are covered with buff-colored down, resembling young Cormorants, though of a different color. They are fed by regurgitation of prepared food, and the act of feeding is said to be done at great inconvenience and in an awkward manner. Both parents sit on the eggs, and take part in feeding the young.

The manuscript notes of Dr. Berlandier, of Matamoras, mention this species as being found in the swamps and marshes of Texas and Tamaulipas, where it feeds on fish, and is called the *garza* — a name somewhat indiscriminately given by the Mexicans to a great variety of Herons and other birds.

Eggs of this species, collected in Florida by Dr. Bryant (No. 3838), present the same chalky appearance as do the eggs of the Cormorants, and are of a uniform bluish chalky-white color, of an oblong oval shape, ranging from 2.00 to 2.30 inches in length, and from 1.30 to 1.40 in breadth.

FAMILY SULIDÆ. — THE GANNETS.

CHAR. Bill somewhat conical, very thick through the base, but rapidly tapering to the tip, the maxillary unguis being only faintly indicated, and but slightly curved; basal portion of the maxillary tomium covered by a supernumerary wedge-shaped piece, distinctly separated from the anterior portion; nostrils obsolete; lores, malar region, chin, and more or less of the throat naked; outer toe about equal to the middle, or very slightly longer; inner edge of middle claw distinctly pectinated. Tail about half as long as the wing, cuneate, the feathers tapering toward the tips.

The Gannets are perhaps properly separable into two genera — *Sula* and *Dysporus*; the latter including only the *S. bassana*. But in considering the small number of American species, no great violence will be done in referring them to a single genus.

GENUS **SULA**, BRISSON.

Sula, BRISS. Orn. VI. 1760, 495 (type, by elimination, *Pelecanus leucogaster*, BODD.).
Dysporus, ILLIG. Prodr. 1811, 279 (type, by elimination, *Pelecanus bassanus*, LINN.).
Piscatrix, REICH. Av. Syst. 1852, p. vi (type, *Pelecanus piscator*, LINN.).
Plancus, REICH. l. c. (type, *Pelecanus parvus*, GM. ?).

CHAR. Same as those of the family.

The four North American species of this genus may be distinguished as follows: —

A. Malar region, with sides of chin and throat, feathered; a narrow strip of naked skin down the middle line of the throat. (*Dysporus.*)

1. **S. bassana.** Legs and feet blackish (in the dried skin). *Adult:* White, the remiges brownish dusky, the head and neck above washed with buff. *Young:* Dusky, streaked or speckled with white. Wing, 19.50 inches; tail, 10.00; culmen, 4.00; tarsus, 2.35. *Hab.* Atlantic coast of North America, south, in winter, to the Gulf of Mexico; Europe.

B. Malar region, with whole chin and upper part of throat naked. (*Sula.*)

2. **S. cyanops.** Legs and feet reddish. *Adult:* White, the greater wing-coverts, alulæ, primary coverts, and remiges dark sooty brown; tail sooty brown, the middle feathers and bases of the others whitish. *Young:* Head, neck, and upper parts dusky; lower parts white, the flanks streaked with grayish; middle of the back and upper part of the rump streaked with white. Wing, 16.53 inches; tail, 8.42; culmen, 3.96; depth of bill through base, 1.44; tarsus, 2.02; middle toe, 2.88 (average dimensions). *Hab.* Coasts and islands of the South Pacific and various intertropical seas; Bahamas and Florida.
3. **S. leucogastra.** Feet greenish or yellowish. *Adult:* Head, neck, breast, and upper parts dark sooty brown; the head and neck hoary grayish in older specimens, sometimes nearly white anteriorly; lower parts posterior to the breast white. *Young:* Nearly uniform sooty brown, lighter beneath. Wing, 15.72 inches; tail, 8.23; culmen, 3.74; depth of bill through base, 1.24; tarsus, 1.71; middle toe, 2.59 (average measurements). *Hab.* Coasts of tropical and subtropical America, north to Georgia.
4. **S. piscator.** Legs and feet always reddish. *Adult:* White, the head and neck tinged with buff, the shafts of the tail-feathers straw- or cream-colored, and the remiges hoary slate. *Young:* Above, sooty brown, the remiges and rectrices more hoary; head, neck, and lower parts light smoky gray. (Colors extremely variable, scarcely two specimens being exactly alike.) Wing, 15.04 inches; tail, 8.93; culmen, 3.26; depth of bill through base, 1.07; tarsus, 1.34; middle toe, 2.25 (average measurements). *Hab.* Intertropical seas and coasts north to Florida.

Sula bassana.

THE COMMON GANNET.

Pelecanus bassanus, LINN. S. N. I. 1758, 133; ed. 12, I. 1766, 217.

Sula bassana, BRISS. Orn. VI. 1760, 503. — BONAP. Synop. 1828, no. 359; Consp. II. 1857, 165. — NUTT. Man. II. 1834, 495. — AUD. Orn. Biog. IV. 1838, 222; Synop. 1839, 311; B. Am. VII. 1844, 44, pl. 425. — LAWR. in Baird's B. N. Am. 1858, 871. — BAIRD, Cat. N. Am. B. 1859, no. 617. — COUES, Key, 1872, 298; Check List, 1873, no. 524; 2d ed. 1882, no. 746. — RIDGW. Nom. N. Am. B. 1881, no. 650.

Sula americana, BONAP. Comp. List, 1838, 60.

Pelecanus maculatus, GMEL. S. N. I. 1788, 579 (young).

Sula alba, MEYER, Taschenb. II. 1810, 582 (adult).

Sula major, BREHM, Vög. Deutschl. 1831, 812.

HAB. Coasts of the North Atlantic; in America, south, in winter, to the Gulf of Mexico.

SP. CHAR. *Adult:* Prevailing color white, the head and neck, except underneath, more or less deeply buff; remiges brownish dusky. "Bill pale bluish gray, tinged with green toward the base; the lines on the upper mandible blackish blue; the bare space about the eye and that on the throat blackish blue; iris white; tarsi, toes, and webs brownish black, the bands of narrow scutellæ on the tarsus and toes light greenish blue; claws grayish white" (AUDUBON).[1] *Young, first plumage:* Head, neck, and upper parts dark grayish brown, relieved by small wedge-shaped white spots on the tips of the feathers, except the remiges and tail-feathers, these markings partaking more of the character of streaks on the head and neck; lower parts whitish, the feathers edged with grayish brown, this color sometimes overlying the whole lower surface, the white being mostly concealed. "Bill light grayish brown ; the bare space around the eye pale grayish blue ; iris green ; feet dusky, the narrow bands of scutellæ pale grayish blue ; claws grayish white" (AUDUBON). *Nestling:* Entirely covered with very fluffy yellowish white down.

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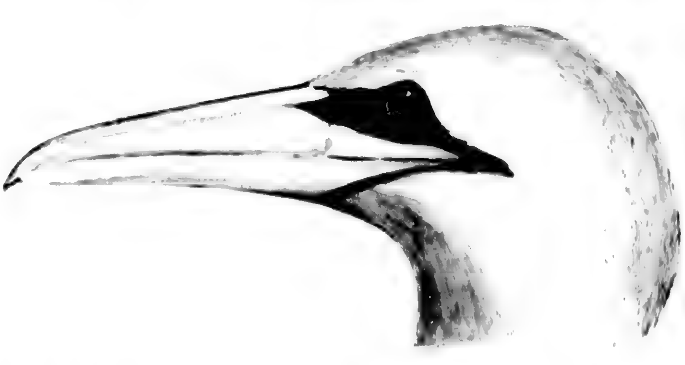
[1] The following are the fresh colors of a fine adult killed in Chesapeake Bay, and sent in the flesh to the National Museum: Bill pale glaucous gray, with sulcus, edges of mandibles, lores, etc., dull blue-black; iris pale yellow; eyelids dull light blue; feet dull slate, with a sharply-defined narrow stripe of apple-green along top of each toe, and following the course of each tendon along the front of the tarsus.

S. bassana.

Total length, 37.00–39.00 inches ; extent, 68.50–74.00 ; wing, about 19.50 ; tail, 10.00 ; culmen, 4.00 ; tarsus, 2.25.

Adult specimens in the collection of the National Museum vary greatly in the extent of the strip of bare skin on the throat. In a male, not quite adult, from the Straits of Gibraltar, it reaches almost to the jugulum ; but in others it does not extend beyond the throat. Perfectly adult individuals have the tail entirely white, only the remiges being dusky. In less mature examples, the tail, as well as the larger wing-coverts, are dusky. Still more immature specimens have the back and scapulars mixed with dusky feathers. A young bird from Europe is very much darker-colored than an American specimen, the lower surface being nearly uniform brownish gray, only the concealed portion of the feathers white ; the white markings are almost entirely wanting on the back and scapulars, and very minute elsewhere.



The Soland Goose, or Gannet, is a bird peculiar to the Northern Atlantic Ocean, and is found both on its eastern and western shores, ranging in America as far south as the New England States, and in Europe to the coasts of Great Britain. Farther south than this its appearance is comparatively rare. This is a northern species, and is more or less resident wherever it is found.

The Gannet is generally given as a resident of Greenland; but Professor Reinhardt states that it is very rare there, and only accidental. It is common in winter off the coast of Maine, and formerly bred on Gannet Rock, near Grand Menan. From time to time specimens are obtained on the coast of Massachusetts; but this is not of frequent occurrence, and examples thus seen are usually immature birds. Its appearance in the bays and inlets of Long Island is so very rare that, according to Giraud, it is not generally known to the hunters; but he received a fine specimen that had been shot on the South Bay, opposite Bellport, and he had also known of several others being procured in the vicinity of New York. Audubon has observed the Gannet as far south as the Gulf of Mexico.

On the opposite side of the Atlantic, Mr. H. Saunders met with this species in considerable numbers, fishing off Cape Trafalgar, in December; and Yarrell mentions its appearance at Madeira, and even as far south as Southern Africa.

Dr. Robert O. Cunningham, in the "Ibis" of January, 1866, gives a very complete account of the history, distribution, and habits of this species, as gathered from the accounts given by the earlier writers, whose works date as far back even as the year 975 A. D. The name of Gannet is an Old English one (Anglo-Saxon, *ganot;* Old English, *gante*); but the origin of the word Soland cannot be satisfactorily made out. There was formerly an idea prevalent that this bird had the habit of hatching out its egg by covering this with its feet; and by some the name is associated with this belief. The Gannet appears to be widely distributed throughout the North Atlantic, on the western shores of Europe, and in the eastern waters of North America. Its breeding-places are not numerous; but in these the birds collect in immense numbers. In the waters of Great Britain and Ireland some of them continue throughout the year; and the same is probably true in regard to the mouth of the St. Lawrence River. There are but six places known in the British waters where this species breeds, but it is also numerous in various portions where it has never been known to breed. It also breeds in the Faröe Islands and in islands on the coast of Iceland. It migrates to the shores of Holland, France, Spain, Portugal, the Mediterranean, and Madeira. In America it has but few breeding-places, is common on the coast, and though found as far north as Greenland, is not known to breed there.

One of the most celebrated breeding-places of the Gannet is the Bass Rock, at the mouth of the Firth of Forth, near the old town of North Berwick. This island is a huge mass of greenstone trap, over four hundred feet in height, and with sides mostly bold and perpendicular. It has on the southeast its only landing-place. *Uriæ*, Gulls, Cormorants, Razor-bills, and Puffins breed on this rock, in common with the Gannet. The latter are met with in great numbers on all the several faces of the rock, and even in the immediate neighborhood of the landing-place. Macgillivray, who visited this rock in 1831, estimated the number of *Sulæ* at about twenty thousand; and Dr. Cunningham, whose visit was made in 1862, estimated their number then at about the same. These birds make their appearance at the island from the middle of February to the first of March, and take their departure in October, though a few remain there all winter.

The earlier writers speak of the nests of the Gannet as being made of sticks; but all now agree that at present no other materials are used in their construction than the common *Fucus digitatus* and other fucoids. They are built in the form of a flattened cone, with a base twenty inches in diameter, and with a shallow terminal cavity. The birds are said to exhibit great industry in collecting the materials, tearing up grass and turf with their powerful bills, and in the process engaging in frequent conflicts. The Gannet lays but a single egg; and if this be removed it is replaced by another. It is described as being elliptical in form, with a rough, dull-white surface — originally white, but almost always more or less patched and stained with a yellowish brown.

It is said that the albumen of this egg does not become white when it is boiled, but remains clear and colorless. The egg is subject to rough usage; for the bird, in alighting, or when disturbed by human visitors, tosses it about or stands upon it. This habit has given rise to the assertion that the egg is hatched by the bird's feet. At the time of Macgillivray's visit the Gannets would allow a person to approach within three feet, and sometimes so near that they could be touched. When any one approached they merely opened their bills and uttered their usual cry, or rose to their feet, expressing some degree of resentment, but none of alarm. Dr. Cunningham, however, had a very different experience when he visited the island. The old birds manifested every symptom of displeasure. Even a young one, only a few weeks old, squeaked angrily, and made impotent demonstrations of self-defence with its soft bill.

Professor Jones, in a note to the St. John's "Natural History and Sport," in Moray, mentions an instance wherein a man, who had ventured to meddle with a young Gannet in the downy state, was attacked by the infuriated parent, who made a swoop at his face, and caught him violently by the nose. This bird is capable of inflicting a very severe bite with the razor-like edges of its mandibles.

In descending from the cliffs into the water, the Gannet usually utters a single plaintive cry, performs a curve, shakes its tail or the whole plumage, and draws the feet backward. When it flies, the body, tail, neck, and bill are nearly in a straight line; the wings are extended, and never brought close to the body, and it moves by regular flappings, alternating with regular sailings. In alighting, it ascends in a long curve, keeps the feet spread, and comes down rather heavily. It has considerable difficulty, when on low ground, in taking wing; and when found inland, in places unfavorable for flight, is occasionally taken alive.

The great power of dilatation possessed by its œsophagus enables this bird to swallow fish of very considerable dimensions. Its food consists of fish of various kinds — chiefly herring. Its power of digestion is very great. It is very greedy, and occasionally becomes so gorged with food as to be unable to rise from the surface of the water, and may then be easily captured.

The old bird feeds her offspring with partially digested fish, which is prepared in her stomach, and introduced little by little into the throat of the young bird; and when the latter is well advanced in growth, it inserts its own bill within the parent's mouth, and receives the fragments the latter disgorges. The cry of the young bird is a shrill squeak, while that of the old bird is hoarse, and resembles the words *kuma, kuma*, repeated rapidly.

Dr. Cunningham states that from one to two thousand of the young birds of this species are annually killed for sale; although they are not now held in such high value as formerly, when they figured at the tables of even the Scottish monarchs. Their consumption is now confined to the lower classes.

Ailsa Craig, an island composed of columnar trap, of a conical form, and eleven hundred feet in height, in the Firth of Clyde, is an important breeding-place of the

Gannet, where it builds in great numbers. St. Kilda, the outermost of the Hebrides, the sides of which are precipitous cliffs fourteen hundred feet high, is another place where the Gannet breeds in large numbers, and where it forms one of the principal sources of the sustenance of the inhabitants.

Gannets also abound on several of the islands on the south of Iceland. There they arrive early in April, and build large and conspicuous nests of seaweed, which they often bring from a great distance. The eggs are deposited in May, and hatched in July. The Gannets leave for the south in October.

This is said to be a very long-lived species. Selby was informed by the keeper of the Bass Rock lighthouse that he could recognize certain individuals that for upwards of forty years had returned to the same spot to breed. This bird is also very long in arriving at maturity, the time required being estimated at from four to five years.

The late Dr. Henry Bryant visited the "Bird Rocks," in the Gulf of St. Lawrence, in the summer of 1860, reaching them on the 23d of June. These rocks are two in number, and are known as the Great Gannet Rock and the Little, or North Bird. On these rocky islands he found the Gannets breeding in large numbers. The highest half of the summit of Gannet Rock and the ledges on its sides, and the whole upper part of the pillar-like portion of Little Bird, and the greater part of the remaining portion of this rock, were covered with the nests of the Gannet. On the ledges these were arranged in single lines, nearly or quite touching one another; and at the summit they were placed at regular distances one from the other of about three feet. Those on the ledges were built entirely of seaweed and other floating substances; on the summit of the rock they were raised on cones, formed of earth or small stones, about ten inches in height and eighteen in diameter when first constructed, presenting at a short distance the appearance of a well-hilled potato-field. He saw no nests built of *Zostera*, or grass, or sods; the materials were almost entirely *Fuci;* though anything available was probably used. In one case the whole nest was composed of straw; and in another, the chief article used was manila rope-yarn. The nests on the summit of Gannet Rock were never scattered, but ended abruptly in as regular a line as a military encampment. Through the midst of the nests were several open spaces, like lanes, made quite smooth by the continued trampling of the birds, which spaces seemed to be used for play-grounds, and generally extended to the brink of the precipice.

The birds were feeding principally on herring, but also on capelin filled with spawn, some fine-looking mackerel, a few squids, and in one instance a codfish weighing at least two pounds. The surface was swarming with a species of *Staphylinus*, that subsisted on the fish dropped by the birds. Occasionally a nest could be seen in which the single egg had not been deposited, and perhaps one in two or three hundred with a newly laid one. On all the rest the Gannets were already sitting; and though none of the eggs were as yet hatched, many of them contained fully formed chicks. On being approached the birds manifested but slight symptoms of fear, and could hardly be driven from their nests; occasionally one more bold would actually attack the intruder. Their number on the summit could be easily determined by measuring the surface occupied by them. By a rough computation it was made to be about fifty thousand pairs. Probably half as many more were breeding upon the remaining portion of the rock and on the Little Bird. All the birds were in adult plumage; differing in this respect from those breeding in the Bay of Fundy, where there were many young ones.

In shape and general appearance the eggs obtained by Dr. Bryant are more like those of the Brown Pelican than of any other North American bird; and they are sometimes stained with blood, as that also commonly is. The calcareous coating is thicker than it is on the eggs of other birds, with few exceptions, and it is very generally marked with scratches and furrows, as if deposited in a soft state. In one specimen this coating was two millimetres in thickness, or nearly one twelfth of an inch; so that the eggshell, though emptied of its contents, is nearly as heavy as an ordinary one that has not been blown. In shape there is a greater tendency to elongation or flattening of the ellipse than in the Pelicans. The color of the egg when it is first laid is chalky-white, which soon becomes a dirty drab. Four eggs selected by Dr. Bryant from many hundreds gave the following measurements: 3.50 inches by 1.79; 3.30 by 2.04; 3.25 by 1.88; 3.26 by 1.65.

Sula cyanops.

THE BLUE-FACED GANNET.

Dysporus cyanops, SUNDEV. Phys. Tidskr. Lund. 1837, pt. 5; Ann. & Mag. N. H. 1847, XIX. 236 P. Z. S. 1871, 125.

Sula cyanops, SUNDEV. Isis, 1842, 858. — SALV. Trans. Zool. Soc. IX. ix. 1875, 496 (Galapagos; critical). — STREETS, Bull. U. S. Nat. Mus. no. 7, 1877, 24 (Christmas I.). — LAWR. Pr. Boston Soc. 1871 (Socorro I. W. Mexico).

Sula personata, GRAY, P. Z. S. 1846, 21.

Sula piscator, PEALE, U. S. Expl. Exp. Orn. 1848, 273 (not of LINN. 1766).

Revillagigedo Gannet, LAWR. l. c.

HAB. Coasts and islands of the South Pacific; Bahamas (breeding; BRYANT), and other West India islands; Southern Florida.

SP. CHAR. Larger than *S. leucogastra* and *S. piscator*, the bill much thicker through the base; feet reddish. *Adult, perfect plumage:* (No. 11953, Bahamas, April, 1859; Dr. H. BRYANT[1]): Prevailing color white, the greater wing-coverts, alulæ, primary-coverts, and remiges, dark sooty brown; middle rectrices hoary white, becoming gradually sooty brown at ends; other tail-feathers hoary white basally, the exposed portion dark sooty brown. Bill (in skin) grayish yellow; bare skin of face, and gular sac blackish (blue in life); feet light reddish. Wing, 16.15 inches; tail, 7.75; culmen, 3.95; depth of bill through base, 1.40; tarsus, 1.80; middle toe, 2.85.[2] *Young*

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[1] Labelled "*S. parva*" and "*S. chrysops.*"

[2] The average dimensions of this species are considerably greater than those given above, six examples averaging as follows; 16.53 inches, 8.42, 3.96, 1.44, 2.02, 2.88. The maximum in this series is 17.80,

(No. 67316, Christmas I.; Dr. T. H. STREETS): Head, neck, and upper parts generally, dark grayish brown; lower neck and entire lower parts white, the flanks streaked with grayish; middle of the back, and upper part of rump, streaked with white. *Older* (No. 68361, Callao, Peru, July 15, 1870; Dr. L. REDTENBACHER): Head, neck, and lower parts, white; upper parts dark grayish brown, the feathers (except remiges and rectrices) narrowly tipped with white; middle tail-feathers hoary white toward base. Bill purplish, the maxilla pale grayish horn-color; feet dusky (in dried skin). Wing, 14.60 inches, tail, 7.75; culmen, 3.60; depth of bill through base, 1.20; tarsus, 1.75; middle toe, 2.35.

In the adult plumage this species presents a quite close resemblance to the mature stage of *S. bassana*; but the very different form of the bill and bare skin about the face will serve readily to distinguish it. The coloration seems to be much more constant in this species than in either *S. leucogastra* or *S. piscator*, the four adults before us not presenting any appreciable differences.

The immature specimen from Callao, Peru, described above, differs slightly from others in the bill being more slender, and of a more purplish hue. It is labelled "*S. variegata*, TSCH.;" but whether really *variegata* or not, there can be little doubt that it is referable to *S. cyanops*.

This species was procured by Dr. Bryant at the Bahamas. It was about the size of the *Sula leucogastra*, but was heavier, and more muscular. He found about twenty pairs breeding at Santo Domingo Key. They apparently lay their eggs later than the Booby; and the largest of the young, found early in April, were not more than half grown, and the eggs of several had been freshly laid. As in the case of the Booby, the number of the eggs is always two. The eggs are whiter than those of the Booby, the chalky covering being much thicker, and do not differ much in size and proportions, the two extremes measuring 2.60 by 1.67 inches, and 2.45 by 1.73. These Gannets did not associate with the other species. The young birds and eggs were all in one part of the island. When half fledged they were very pretty, the snowy white down with which they were covered forming a striking contrast to the dark brown of the tail and wings, then just appearing. Their habits were precisely the same as those of the Boobies, and their internal structure presented no appreciable difference.

The *Sula personata* of Gould is identical with the Bahama species. It was noticed at sea by Dr. Pickering, between the Sandwich Islands and our western coast, in long. 167° 30′ W. As this locality is the nearest to the coast of North America of any given by the naturalists of the Wilkes Expedition, this species may be looked for as an inhabitant of the Pacific coast of the United States. It was also observed in other localities in large numbers by the naturalists of that Expedition. It was found most abundant at Honden Island and Enderby's Island, in both of which it was engaged in the duties of incubation. So far as is known, it inhabits the Pacific Ocean as far to the southwest as Northern Australia, and is more abundant in the northern and eastern portion of its range during the season devoted to the rearing of its young.

Mr. Peale states that these birds were first seen on the 20th of July, lat. 13° 30′ 28″ S., long. 89° 25′ W. One month afterward they were found in great numbers at Honden Island, one of the Paumotu Group, where they were sitting on a single egg each, one bird having only two eggs. They had no nest whatever, not even a cavity scratched in the sand. Flat dry sandy beaches were selected on the shores of the lagoons, the female laying her egg on the bare ground, the male assisting in the duties of incubation. They remained very gravely at their stations, regardless even of man. Many were pushed off their nests with the muzzles of the guns; they

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9.10, 4.15, 1.60, 2.15, 3.10 — a specimen from the Paumotu Islands being the largest. The smallest is the Peruvian specimen described above.

fought and scuffled with the offensive weapon, but returned the moment it was withdrawn. A few had the sense to bite at the hands in place of the gun-barrel. They hissed like the Domestic Goose, and had a very hoarse, croaking voice.

The egg is said to measure 2.60 by 1.80 inches, some being equally rounded at both ends, while others are a little pointed at one end. The color is a bluish green inside, but covered outside with a dry rough white coating, showing the color of the interior through it. The young were at first covered with a fine white down, but the feathers afterward came out of an ash-color. The seasons of incubation did not appear to be regular. At Enderby's Island these birds were hatching in January, and at other places in intermediate seasons. This species is also referred to by Dr. Pickering as being abundant at Gardner's Island, and in other places.

Eggs of this bird, obtained in the Bahamas by Dr. Bryant, are now in the Smithsonian Collection (No. 1712). They are of a uniform dull white color, and measure 2.45 by 1.70 inches; one egg (No. 2438) measures 2.55 by 1.75.

Sula leucogastra.

THE BOOBY GANNET.

Petit Fou, BUFF. Pl. Enl. 973.

Pelecanus leucogaster, BODD. Tabl. P. E. 1783, 57 (ex Pl. Enl. 973).

Dysporus leucogaster, SUNDEV. P. Z. S. 1871, 125.

Sula leucogastra, SALV. Trans. Zool. Soc. IX. ix. 1875, 496 (Galapagos; critical). — STREETS, Bull. U. S. Nat. Mus. no. 7, 1877, 22 (Gulf of California). — RIDGW. Nom. N. Am. B. 1881, no. 652. — COUES, 2d Check List, 1882, no. 747.

Sula fusca, AUD. B. Am. VII. 1844, 57, pl. 426 (not *Pelecanus fuscus*, LINN.).

Sula fiber, LAWR. in Baird's B. N. Am. 1858, 872 (not *Pelecanus fiber*, of LINN. 1766). — BAIRD, Cat. N. Am. B. 1859, no. 618. — COUES, Key, 1872, 298; Check List, 1873, no. 525. — SCL. & SALV. Nom. Neotr. 1873, 124.

HAB. Coasts of tropical and subtropical America, north to Georgia.

SP. CHAR. Feet greenish or yellowish. *Adult male, full breeding-plumage?* (No. 58805, Isabella Island, Western Mexico, April, 27, 1869; Colonel A. J. GRAYSON): Head, throat, and nape, grayish white, the feathers edged with grayish brown, especially toward bases; foreneck, jugulum, and entire lower parts, pure white, this color extending in a broad collar round lower part of the nape, the foreneck and jugulum strongly tinged with delicate peach-blossom pink. Upper parts in general grayish brown, the remiges darker, the larger scapulars tipped with grayish white; upper tail-coverts and middle tail-feathers white, the latter passing into light brownish gray terminally, along the edges; outer rectrices grayish brown, paler basally, the shaft white, except near the end; other rectrices intermediate in color between the middle and outer. Wing, 16.30 inches; tail, 6.50; culmen 3.95; depth of bill through base, 1.30; tarsus, 1.85; middle toe, 2.65.[1] Bill (in dried skin) pale purplish gray, nearly white in middle portion; feet dusky greenish. *Adult, usual plumage:* Head, neck, and breast, dark sooty brown; upper parts in general similar, but lighter, the remiges and rectrices more dusky, especially the former. Lower parts, posterior to the breast, uniform white. Bill greenish gray or dirty yellowish, in skin (said to be "bright yellow, pale flesh-colored toward the end," in life), the naked lores and gular sac darker; iris white (AUDUBON); feet greenish in dried skin, said to be pale yellow, in life. *Young:* Plumage nearly uniform grayish brown, or sooty gray, lighter beneath. "Bill and claws dusky; tarsi and toes with their membranes dusky" (AUDUBON).

The changes of plumage in this species are, as is the case with *S. piscator* and *S. cyanops*, very perplexing. The greenish or yellowish feet afford the most obvious specific character, the feet being reddish in both the species named above. The size is about intermediate between the two. The change from the first plumage to the perfect adult dress must be a very gradual one, since scarcely two individuals are exactly alike. In the youngest specimens the head and neck are light smoky grayish, like the lower parts, considerably paler than the wings, the remiges having a slight glaucous cast. The first change toward maturity is seen in the darkening of the head and neck (or lightening of the abdomen), so that the difference in color between the lower parts and the neck is more or less distinctly marked. It is quite possible that this species sometimes becomes almost wholly white, like *S. piscator*, since the specimen described above as being probably the adult in full breeding-dress corresponds quite closely with some specimens of *S. piscator* which have nearly assumed the white dress of the perfect adult. This stage is represented in the collection by a single specimen. A phase intermediate between this and the plumage generally considered the adult (dusky head, neck, and breast, and white under parts), is represented by two examples, one from Isabella Island, the other from Manzanilo Bay (both Western Mexico). This phase is similar to the plumage usually considered the adult, but the brown of the breast passes gradually into grayish white on the head.

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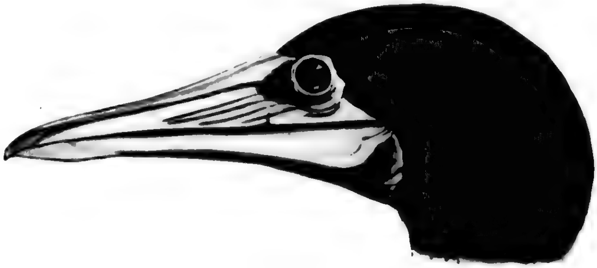
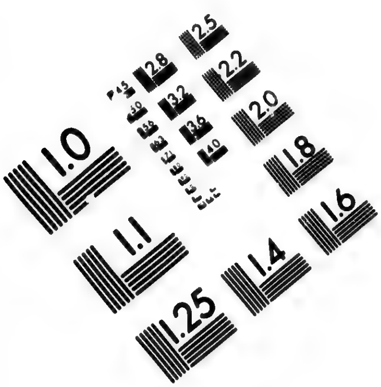
[1] The average dimensions of fifteen specimens are as follows, the measurements being in the same sequence as given above: 15.72 inches, 8.23, 3.74, 1.24, 1.71. 2.59.



The Booby Gannet has only a limited claim to a place in the fauna of North America, where its appearance is chiefly accidental on the southern coast from Georgia southward, and along the shores of the Gulf of Mexico. It is more common about the Tortugas and among the Florida Keys, and is said to breed in some of the islands about the extreme southern end of Florida. It is found in the West India Islands, on the northeast coast of South America, and in Central America; and being a great wanderer, is of accidental occurrence in various parts of the ocean.

Mr. Salvin mentions that one of this species came on board the steamer in which he was a passenger, when off the coast of San Salvador; and Mr. G. C. Taylor speaks of this bird as not uncommon along the coast of Honduras. He saw an individual of this species in Fonseca Bay; and one flew on board the steamer, on the passage from Panama to La Union, which had kept company with the vessel for some time, and finally, after repeated attempts to alight, had perched in the rigging, where it was caught by a boy.

Professor Alfred Newton states that this species was occasionally met with in the Island of St. Croix; but he is quite sure that it does not breed in that vicinity, as it evinced altogether too great a partiality for the deep-sea fishery to be seen often on land. One was brought alive to Mr. Edward Newton in September, 1858, which had been taken asleep by a negro. It was of an exceedingly fierce disposition, refused all food, and at last died; at no time, however, exhibiting anything like fear. When between St. Croix and St. Thomas, one of this species flew within a few yards of the schooner on which Mr. Newton was; and he was informed of another that flew so



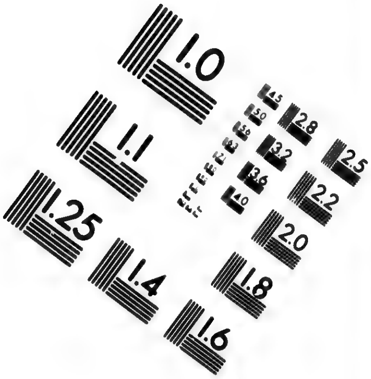
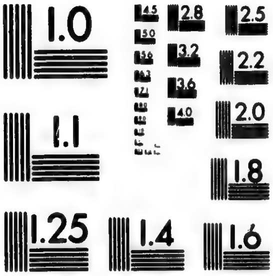
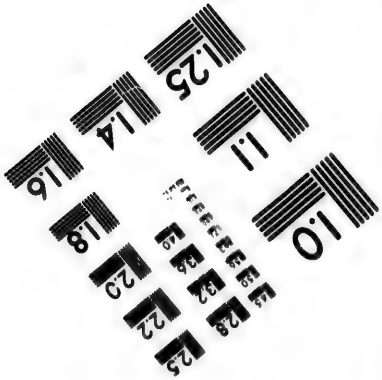


IMAGE EVALUATION TEST TARGET (MT-3)





2.8
2.5
2.2
2.0
1.0

close to the deck of one of the Royal Mail Company's steamers that it was caught on the wing by one of the passengers.

Mr. E. C. Taylor states that he occasionally met with this species among the Windward Islands; but he afterward found it much more abundant on the coast of Venezuela.

A Booby Gannet was taken in Bermuda, which had flown into one of the soldiers' barrack-rooms at Fort Catharine, Oct. 3, 1847. This species is given by Mr. G. R. Gray as being entitled to a place in the fauna of New Zealand. Captain Beavan ("Ibis," 1868) also mentions meeting with it on the 3d of July in the Bay of Bengal. The birds were quite numerous, and were flying low and very fast, skimming along the surface of the water, and paying no attention to the vessel.

Audubon met with this species near the Tortugas, and he found one of its places of resort on a small sandy island eight miles from the lighthouse, obtaining there a number of specimens. The wounded birds that fell on the land made immediately for the water, moving with considerable ease. Those which fell on the water swam off with great buoyancy and such rapidity that it was difficult to overtake them, and those which had only a wing broken escaped altogether. On another island, covered with bushes and low trees, he found a number of Boobies breeding in company with the *Anous stolidus*. He found them perched on the top branches of the trees in which they had nests. As they flew about overhead they made no noise, except at the moment they rose from their perches; their cry at that time was a single harsh and guttural sound, resembling the syllables *hork-hork*. He found the nest placed on the tops of the bushes at a height of from four to ten feet, large and flat, formed of a few dry sticks, covered and matted with seaweeds in great quantities. The bird evidently returns to the same nest for years in succession, repairing it as occasion requires. In all the nests which he examined, only one egg was found; and as most of the birds were sitting, and some of the eggs had the chick nearly ready for exclusion, it is probable that this bird raises but a single young one at a time.

Audubon describes the egg as being of a dull white color, without spots, about the size of the egg of a Common Hen, but more elongated, being 2.38 inches in length, and 1.75 in breadth. In some nests the eggs were more or less incrusted with the filth of the parent. The young were covered with down, and had an uncouth appearance. Their bills and feet were of a deep livid blue. They were evidently abundantly supplied with food, as a great quantity lay under the trees in a state of putrefaction, and a constant succession of birds were coming from the sea with food for their young. This consisted chiefly of flying-fish and small mullets, which they disgorged in a half macerated state into the open throats of their young. No birds having an immature plumage were found breeding.

Audubon describes the flight of this species as being graceful and sustained for a great length of time. The Gannet passes swiftly at a height varying from two feet to twenty yards above the surface, its wings being distended at right angles to the body. When overloaded with food it alights on the water, where it will remain for hours at a time. Its range extends along our coast not farther than Cape Hatteras. This bird has a sufficient power of wing to enable it to brave the tempest; and in fair weather it ventures far out to sea, and is often seen one or two hundred miles from the land.

In the bodies of those Gannets which Audubon examined, he found mullets weighing more than half a pound each. The old birds drive away from their neighborhood those in immature plumage during the periods of incubation. This species apparently requires several years to arrive at maturity. Like the Common Gannet, it may be secured by fastening fish to a soft plank and sinking it in the water. The Booby plunges headlong upon the plank, and drives its bill into the wood.

Mr. Gosse met with this species in Jamaica. He found it not infrequently taking shelter from the attacks of the Frigate Bird in trees near Bluefield Bay. The birds huddled there in little groups, sitting closely side by side, so that four or five might be brought down at a shot. He invariably found the stomachs of those which were thus obtained entirely empty, the birds having probably been obliged to disgorge their prey by the attacks of the Frigate-birds. As they sit they frequently utter a loud croaking cackle. One Gannet which had been disabled manifested great ferocity, striking forcibly with its open beak, endeavoring to pierce with its very acute points, as well as to cut with its keen, saw-like edges. It had sufficient sagacity to pay no attention to a stick, but struck at the hand of Mr. Gosse, by whom the instrument of attack was held.

Dr. Bryant, in his paper on the birds of East Florida ("Proc. Boston Soc. Nat. Hist." VII. 5), states that he found the Booby quite numerous at the Tortugas, but did not find any breeding there; and he was informed by the keeper of the light that, so far as he knew, none had bred there for eighteen years, and Dr. Bryant could find no one that had ever known it to breed in that locality.

Afterward, in his paper on the birds seen at the Bahamas, in the same volume (p. 123), he is positive that Audubon was mistaken in saying that this species breeds at the Tortugas. The time at which it lays its eggs, and the absence of any nest, are circumstances quite at variance with his account; and he evidently mistook the nests of the Brown Pelican for those of the Booby. Dr. Bryant found the eggs laid in most cases by the first of February, the bird making no nest, not even an excavation in the soil. The eggs were deposited indifferently on sand, grass, or bare rock. His first visit to one of their breeding-places was made on the 10th of April at Santo Domingo Key, thirty-three miles south of Great Ragged Island, at the extremity of the southern point of the bank, and rarely visited. It is four acres in extent, and so low that in storms it is entirely washed by the waves. At the time of his visit it was covered with Boobies, mostly young, the greater part fully fledged, but still dependent upon the parent birds for food. The latter kept by themselves, and were perched on the rocks all around the edge of the Key. The young were sprinkled over the Key, wherever there was room, and were of all ages, from those almost able to fly, to such as had just been hatched. He found the eggs of twenty pairs, most of them on the point of hatching. The number in every case was two. In appearance they resembled those of the family generally, being a greenish white covered with a chalky substance. In size they varied considerably, as also in form. The most elongated one measured 2.64 by 1.50 inches, the broadest 2.16 by 1.57 inches; the others varying between these two extremes, but averaging more nearly like the latter.

The young were entirely naked when first hatched, and of a livid blue color. They soon become covered with a white down; then the quills and tail-feathers, of a cinereous brown, make their appearance; then the feathers of the body, neck, and head; and lastly those of the throat. The old birds did not trouble themselves to get out of his way, but on being approached too nearly, darted at him with their powerful bills in a most savage manner. They were very quarrelsome, continually striking at one another, not at all in an amicable manner, but as if they intended to do all the mischief in their power. It was difficult to understand how the different birds recognized their own young, as they did not continue in the same place after the young had attained any size.

Dr. Bryant considers the Booby the most expert diver with which he is acquainted.

In whatever position this bird may be — whether flying in a straight line, sailing in a circle, just rising from the water, or swimming on the surface — the instant it sees its prey it plunges into the water. He has frequently seen one dive while on the wing, rise to the surface, and dive in rapid succession five or six times; and on taking flight again dive before it had risen more than two or three feet from the surface, and catch a dozen fish in the space of a minute. But there is nothing graceful in its movements. The stomachs of the Boobies examined contained a great many varieties of fish; their principal food seemed to be flying-fish and a species of *Hemirhamphus*.

In the Report on the Birds of the Wilkes Exploring Expedition the Booby is referred to as one of the most extensively diffused of aquatic birds, being equally abundant both on the Atlantic and Pacific coast of the southern portion of the continent of America, and throughout the Pacific Ocean to the coasts of Asia. Mr. Peale found it breeding on nearly all the coral islands visited by the Expedition. The nests were constructed of sticks and weeds, on bushes and low trees, and were generally found to contain but one egg, which was of a bluish-white color.

Mr. Peale relates that while exploring Enderby's Island — which is of coral formation — he found, at least a quarter of a mile from the shore, a bird of this species in full plumage, having a white breast, which indicated that it was several years old. On picking it up he was surprised to find that it had but one wing, the other having been, by some accident, taken off close to the body. The wound was perfectly healed, and the bird in excellent health, and very fat! It was fed by its comrades, which were younger birds — as was indicated by the brown plumage of their breasts; and they continued while Mr. Peale was near to display toward their injured companion all the careful anxiety of parents for their young.

This species was noticed by Dr. Pickering in the Bay of Rio de Janeiro, where it was common. He also saw it at various other localities, and found it particularly abundant at Aurora Island in September.

Eggs of this species in the Smithsonian Collection (No. 1713), obtained in the Bahamas by Dr. Bryant, are of a uniform dull chalky white color. Two examples measure, one 2.30 by 1.55 inches, the other 2.20 by 1.60.

Sula piscator.

THE RED-FOOTED BOOBY.

Pelecanus piscator, LINN. S. N. ed. 10, I. 1758, 134; ed. 12, I. 1766, 217.

Sula piscator, BONAP. Consp. II. 1857, 166. — LAWR. Pr. Boston Soc. 1871, 302 (Socorro I., W. Mexico; common). — STREETS, Bull. U. S. Nat. Mus. no. 7, 1877, 23 (Fanning Islands, N. Pacific).

Sula candida, "BRISS." STEPHENS, Shaw's Gen. Zool. XIII. 1826, 103.

Sula erythrorhyncha, LESS. Traité, I. 1831, 601.

Sula rubripes, GOULD, P. Z. S. 1837, 156.

Sula rubripeda, PEALE, U. S. Expl. Exp. Orn. 1848, 274.

HAB. Coasts and islands of the intertropical regions. Florida (Mus. Philad. Acad.).

SP. CHAR. Feet reddish. *Adult male, perfect plumage* (No. 15611, Pacific Ocean; T. R. PEALE): Plumage white, the head and neck tinged with buff, the shafts of the tail-feathers deep straw-yellow; remiges, greater and primary wing-coverts, and alulæ hoary slate-gray. *Adult female* (*perfect plumage?*), (No. 50866, Socorro Island, Western Mexico; Colonel A. J. GRAYSON): Similar to the above, but the tail hoary brownish gray, with whitish shafts, the white of the entire upper parts strongly tinged with buff-yellow. "Iris brown; bare space on chin and throat jet-black; bill pale violet, bare space on forehead, and base of lower mandible, purplish red; bare space round eye violet-blue;" feet coral-red. Length, 29.50 inches; extent, 30.00; wing, 15.80; tail, 9.00; culmen, 3.50; depth of bill through base, 1.10; tarsus, 1.50; middle toe, 2.40.[1] *Younger:* Upper tail-coverts and tail as in the preceding; rest of the plumage sooty gray, the head and neck paler, sometimes nearly white. "Bill lead-color, with a band of yellow across the forehead and two yellow patches at the base of the lower mandible; feet and legs red" (W. T. MARCH, manuscript). *Young, first plumage* (77905, Dominica, West Indies, April, 1879; Dr. H. A. NICHOLLS): Above, sooty grayish brown, the remiges and rectrices hoary slate; head, neck, and lower parts light smoky gray. Bill blackish. *Older?:* Similar, but lower parts, posterior to the breast, dirty white, the head and neck sooty grayish brown; bill blackish.

The plumage of this species is so exceedingly variable as to render it quite doubtful whether the various phases noted (scarcely two examples in a series of fourteen specimens being alike) are wholly dependent on age or sex. Some examples in the immature dress have the head, neck, and jugulum (!) nearly white, the remaining lower parts light sooty gray; while others (apparently younger) have the head, neck, and jugulum dark sooty brown, and the lower parts whitish — just the reverse. At all stages it may be distinguished from *S. eucogastra* by the red feet and, usually, the smaller size, especially of the bill and feet.

In all adult examples, and in most young ones, the red color of the feet is sufficient to distinguish this species from *S. leucogastra*, independent of the shorter bill and difference of plumage. There are two young specimens[2] in the collection, however, which, although *apparently* having reddish feet (it being, of course, impossible to tell what the color was originally), agree best with *S. leucogastra* in the size and shape of the bill, and in colors. In every respect they agree quite closely with a specimen of unquestionable *S. leucogastra* from Jamaica, in which the feet seem to be reddish, but which *in life* (so we learn from the label) had them "horny yellow."

The claims of this species to a place in the North American fauna rest upon a specimen, examined by Professor Baird, in the collection of the Philadelphia Academy, labelled as from Florida, and presented by Mr. Audubon, by whom it was considered as the *Sula fusca* (= *leucogastra*). It is smaller than *S. leucogastra*, but of much the same shape and general appearance. The head, neck, and whole under parts are white, the feathers of the sides tinged with brown. The back, wings, and tail are dusky brown, the feathers of the back and the wing-coverts edged with whitish, those of the rump and upper tail-coverts less distinctly. The middle tail-feathers are hoary gray at the base, with whitish shafts; the rest become darker, the shafts browner toward the exterior of the tail. The colors of the naked parts are not distinguishable; the legs and feet appear to have been greenish dusky.[3]

Length, about 27.00 inches; wing, 14.00; tail, 8.00; tarsus, 2.00; middle toe and claw, 3.00; bill, about 3.25.

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[1] The average measurements, given in the same sequence as above, of a series of fourteen specimens, are as follows: 15.04 inches, 8.93, 3.26, 1.07, 1.34, 2.25. Upon comparing these figures with those on p. 178, it will be seen that while the wing and tail are about the same average length as in *S. leucogastra*, the bill is decidedly shorter and more slender, and the tarsus and middle toe also much shorter.

[2] Nos. 1963 (no locality), J. J. AUDUBON; labelled "*Sula fusca*, L.," and 21279, "off Meia-co-shima Islands."

[3] If the specimen is really *S. piscator*, the feet must have been red in life; otherwise it must be *S. leucogastra*.

Mr. Richard Hill has identified this species as one of three or four kinds of Boobies which frequent the Pedro Keys of Jamaica, and are also seen on the coast near Kingston. It is known as the Black-and-white Booby. Mr. Hill had in his possession a pair of this species alive, of whose habits in confinement Mr. Gosse has published some interesting notes. The sympathy manifested by most gregarious birds for their wounded companions is very strongly shown by this species. It makes extraordinary efforts to assist a wounded bird when fluttering in the water. An accident which happened to one of the two Boobies in Mr. Hill's yard gave an opportunity of witnessing these traits of feeling and the attendant emotions. Mr. Hill's little nephew, in chasing with a whip one of the birds, entangled the lash about its wing and snapped the arm-bone. Mr. Hill adds: The one bird not only showed sympathy for the other, but exhibited curiosity about the nature of the accident. The wounded bird withdrew into a lonely part of the yard, and stood there drooping. The female sought him as soon as she heard his cry; and after ascertaining that the injury was in the wing, proceeded to prevail on him to move the limb, that she might see if he was disabled beyond the power of using it for flight. After a quacking *honk* or two, as a call to do something required of him, the female stretched out one of her wings; the wounded male imitated her, and making an effort, moved out in some sort of way the wounded member to its full length. He was now required, by a corresponding movement, to raise it; he raised the broken arm, but the wing could not be elevated. Her wounded companion was next persuaded to make another trial at imitation, and to give the wing some three or four good flaps. He followed the given signal, and gave the required beats; but twirled the broken wing quite round, and turned it inside out. As by this the mischief was greatly increased, Mr. Hill deemed it necessary to put a stop to this process of investigation of the one bird into the misfortune of the other. Taking up the bird with the twisted wing and setting the limb, he restrained him from any farther gratification of his mate's curiosity by tying the wing into place, and keeping it so tied until the bone united. She continued to attend him, carefully examined day after day the broken limb, and occasionally called upon him to make an effort to raise his disabled member, using ineffectual endeavors to persuade him to lift it by lifting her own from time to time.

This species is said to have a predilection for elevated spots as perching-places. If a single stone is higher than the others, the fact is quickly noticed, and the bird, after having partaken of a satisfactory meal, takes its stand on the elevated spot. If a log or pile of wood is at hand, the bird perches on that to sun itself, extending its wings over its tail, and erecting its dorsal feathers for the admission of the sun's rays. It roosts upon similar elevated places. It has great prehensile power with its foot, and its serrated middle toe is frequently applied to scratch the naked skin about its eyes and face. Mr. Hill's birds were more fond of flesh meat, such as beef and pork, than of fish. They disliked fat, and would reject it when given separately from the lean. They never drank, and were as regardless of the water about the yard as if they were unadapted for it. Mr. Hill also states that the anatomy of this species exhibits in a remarkably interesting manner its fine adaptation for the purpose of giving the bird buoyancy: the muscles show air-vessels interspersed among them in a manner altogether surprising.

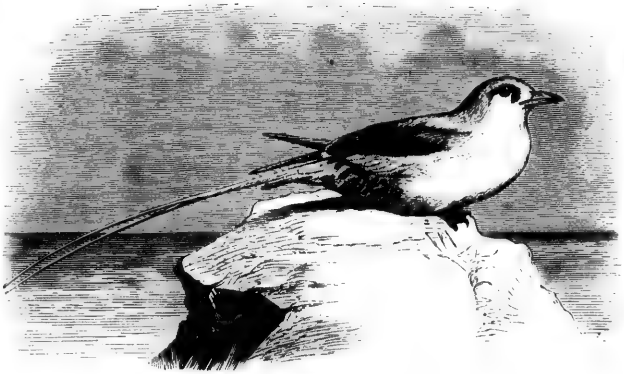
FAMILY PHAËTHONTIDÆ. — THE TROPIC BIRDS.

CHAR. Bill conical, much compressed, the maxillary tomium exceedingly concave in the middle portion, descending, convex, and bulging outward at the base; culmen gently curved; nostrils very distinct, linear; head normally feathered. Primaries much elongated in proportion to the secondaries; tail very short, graduated, the central pair of rectrices linear and excessively elongated (longer than the wing) in the adult. Lateral toes nearly equal (outer longest), and but little shorter than the middle. Plumage very compact, satiny. Color chiefly white.

This family is composed of the single genus *Phaëthon*, of tropicopolitan range, and represented in America by two of the three known species.

GENUS **PHAËTHON**, LINNÆUS.

Lepturus, BRISS. Orn. VI. 1760, p. 479.
Phaëthon, LINN. S. N. ed. 10, I. 1758, 134; ed. 12, I. 1766, 219 (type, *P. æthereus*, LINN.). — LAWR. in Baird's B. N. Am. 1858, 885.
"*Tropicophilus*, LEACH," STEPH. Gen. Zool. XIII. i. 1826, 124.
Phœnicurus, BONAP. Consp. II. 1857, 183 (type, *Phaëton phoenicuros*, GMEL.).



P. flavirostris.

CHAR. Same as those of the family.

The three known species of this genus are very well marked, and may be easily distinguished by the following characters: —

A. Elongated middle rectrices, with their webs very much broader than the moderately rigid shaft.

1. **P. flavirostris.** Bill yellow; middle tail-feathers pinkish, with black shafts; wing about 11.00 inches; culmen 2.00 or less. *Hab.* Intertropical seas, north to Florida.
2. **P. æthereus.** Bill deep coral red; middle tail-feathers pure white, with white shafts; wing about 12.00 inches; culmen about 2.50. *Hab.* Intertropical seas, north to Lower California.

B. Elongated middle rectrices with their webs much narrower than the very rigid shaft.

3. **P. rubricaudus.**[1] Bill yellowish ; middle tail-feathers dull reddish, with black shafts ; wing 13.00 inches or more ; culmen about 2.50. *Hab.* South Pacific Ocean.

Phaëthon flavirostris.

THE YELLOW-BILLED TROPIC BIRD.

Lepturus candidus, BRISS. Orn. VI. 1760, 485.

Phaeton candidus, GRAY, Gen. B. 1847, pl. 183.

Phaeton aethereus, BODD. Tabl. P. E. 1783, 22 (ex Pl. Enl. 369 ; nec LINN., 1758). — BONAP. Synop. 1828, no. 361 ; Consp. II. 1855, 183. — NUTT. Man. II. 1834, 503. — AUD. Orn. Biog. III. 1835, 442 ; Synop. 1839, 312 ; B. Am. VII. 1844, 64, pl. 427.

Phaethon flavirostris, BRANDT, Bull. Sc. Acad. St. Petersb. II. 1837, 349. — SCL. P. Z. S. 1856, 144. — LAWR. in Baird's B. N. Am. 1858, 885. — BAIRD, Cat. N. Am. B. 1859, no. 629. — COUES, Key, 1872, 307 ; Check List, 1873, no. 538 ; 2d ed. 1882, no. 763. — RIDGW. Nom. N. Am. B. 1881, no. 654.

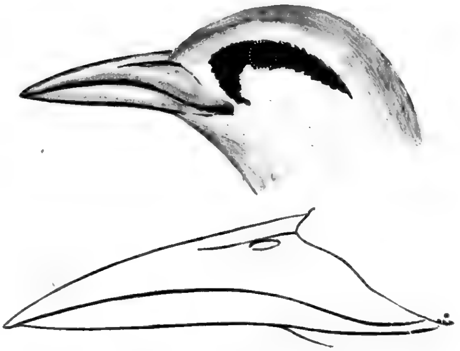
? *Phæton flavo-aurantius*, LAWR. Ann. Lyc. N. Y. VII. April, 1860, 143 (hab. ignot.).

" *Phaeton Edwardi*, BRANDT."

The Tropic Bird, EDWARDS, Nat. Hist. B. 1749, pl. 149.

HAB. Atlantic coasts of Central America, north to Florida ; West Indies ; Samoan Islands.

SP. CHAR. Bill yellow. *Adult:* General color satiny white, usually tinged more or less with salmon-pink ; a broad crescent before the eye and a stripe behind it, exposed portion of the posterior scapulars, inner tertials, a broad stripe across the middle of the middle wing-covert region, and outer webs of four to six outer primaries deep black. Shafts of the tail-feathers, and of all the primaries toward the base, and a broad stripe on the inner web of the outer primaries next the shaft also black ; edge of longer scapulars and ends of outer webs of outer primaries white ; flanks longitudinally striped with black ; elongated middle rectrices delicate pinkish salmon-color, sometimes nearly white. Bill deep chrome- or wax-yellow ;[1] iris brown ; tarsi and extreme base of the toes yellow, rest of feet black. *Young:* General color white ; black of the wings and that behind the eye indicated by spots ; back, scapulars, rump, upper tail-coverts, nape, and crown irregularly barred with black ; tail-feathers marked with a black spot near the end, the middle rectrices not elongated.



Total length, about 25.00 to 32.00 inches ; extent, about 38.00 ; wing, 11.00 ; elongated middle tail-feathers sometimes 20.00 ; culmen, 2.25.

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[1] PHAËTHON RUBRICAUDUS.
Phaeton rubricauda, BODD. Tabl. P. E. 1783, 57 (ex BUFF. Pl. Enl. 979).
Phaëthon rubricaudus, STREETS, Bull. U. S. Nat. Mus. no. 7, 1877, 25 (Christmas I.).
Phœnicurus rubricauda, BONAP. Consp. II. 1857, 183.
Phaëton phoenicuros, GMEL. S. N. I. ii. 1788, 583. — JARD. Contr. Orn. 1852, pl. 84, fig. 3.
Phaëthon æthereus, BLOXH. Voy. Blonde, 1826, 251 (not of LINN., 1766).

[2] Audubon describes the bill of the male as "orange-red," and that of the female as yellow ; but he seems to have had *P. æthereus* in mind in the former case, though his description otherwise applies exclusively to *P. flavirostris*. He says that both sexes have the "iris brown ; tarsi and base of toes yellow, the rest and the webs black, as are the claws" ("Birds of America," Vol. 7, p. 65).

The Yellow-billed Tropic-bird — intertropical in its distribution, and nomadic in its general character, breeding in different parts of the globe on islands placed in mid-ocean, thousands of miles apart — is entitled to a place in the fauna of North America as an occasional visitor to the Atlantic coast. Under the name of *œtherius* Audubon figured and described an individual which had been taken on the Tortugas, in the summer of 1832, by Mr. Robert Day, of the United States revenue-cutter "Marion." Two specimens were shot out of a flock of eight or ten.

The description of this species given by Mr. Cassin was from a specimen obtained on the south side of Cuba, where — as Dr. Gundlach has informed me — it is resident throughout the year; and from this its breeding in that neighborhood may naturally be inferred.

Mr. Gosse, in his Birds of Jamaica, refers to the manuscript of Mr. Robinson, in which reference is evidently made to this species. The bird described was an immature example. Its habits are indicated as being similar to those of the Terns. It was brought to him alive, having been knocked off a fish-pot buoy, and he kept it alive for nearly a week, feeding it with the offal of fish, which it ate greedily. When this bird attempted to walk, it spread its wings and waddled along with great difficulty — a result due not only to the position of its legs, but also to their shortness and weakness. Sometimes it made a chattering noise, like that of the Belted Kingfisher; and at other times it had another cry not unlike that of a Gull. It would, when provoked, bite severely. Mr. Gosse was informed that this species is one of the constant frequenters of the Pedro Keys.

Professor Alfred Newton describes the flight of the Phaëton as something having no resemblance to that of any other sea-bird with which he is acquainted. The chief peculiarity of its motion is the regularity and rapidity with which the strokes of the wing are given.

In the islands of Bermuda, according to Major Wedderburn, this species is very common. It arrives regularly every year from the south in March and April. In 1848 it was seen as early as the 10th of March, and as late as September 25. In 1850 eight were seen near the lighthouse as early as March 1. One was seen Nov. 19, 1849, twenty miles out at sea.

The Tropic-bird breeds about the beginning of May, in holes in the rocks in the Bermuda islands — particularly about the South Shore and Garnet-head Rock. The parent-bird sits so close that it will allow itself to be caught in the hand. It shows some disposition to fight, however, and will seize an intruding hand in its powerful serrated bill, occasionally biting severely. The young birds are marked on the back and wings with transverse bracket-shaped bars, but want the two elongated centre tail-feathers. It is a very curious fact that the young birds are never seen after they leave the holes in which they were reared; and it is supposed that they at once go to sea with their parents. The Phaëton lays one egg only, and this is of a chocolate color, with large brown patches, and spotted with black and brown — exactly resembling in color the eggs of the European Kestrel, but being larger and more oval.

The account of the breeding-habits of this species here given, Mr. Hurdis supplements by the statement that the favorite resort of this interesting bird is among the small islands at the entrance of Castle Harbor, on the shores of Harrington Sound, and along the south coast, from the lighthouse to the northwest extremity of Somerset. There, conspicuous by the glittering whiteness of the plumage, and by the two long slender feathers of the tail, numbers of this species may be seen, busy on the wing, wheeling occasionally in their flight, and dashing perpendicularly into the blue waves to secure their prey, in the manner of the Terns.

On the 10th of May Mr. Hurdis explored for miles the rugged coast frequented by these birds, and found it to all appearance deserted, not only by them, but by every other species of sea-bird; but on a careful examination the rocky cliffs were discovered to abound with the Phaëton in the act of incubation. Those not thus employed were seeking food at a distance in the ocean.

This bird makes no nest; but having selected a hole or cavity in the rock — sometimes elevated, at other times merely beyond the reach of the waves — it invariably lays a single egg. Some of these holes are superficial; others, in the softer rock, appear like a rabbit's burrow; and in a few instances he found the entrance barely large enough to admit the arm, and too deep to allow the egg to be reached with the hand. In one instance he could only ascertain the presence of the old bird by touching it with the end of the ramrod, and thus causing it to give utterance to its well-known grating cry.

When the breeding-place is intruded upon, the sitting bird makes no effort to escape, but allows itself to be taken by the hand — not, however, without some resistance from its strong and sharp-pointed bill; both male and female may be captured in this manner. According to Mr. Hurdis, the egg varies considerably in color. Some specimens are of a reddish gray, thickly covered with streaks and blotches of Indian-red, deepest at the larger end; others are drab, finely speckled with the same deep red. The young remain in the nest, or breeding-place, until capable of flight. They are at first covered with a long white down, which gradually disappears as the bird advances in growth.

From the diminutive size and backward position of the feet, this bird is unable to walk in the ordinary mode; but, resting its breast on the ground, and partially spreading its wings, it shuffles from place to place in a peculiar and awkward manner.

Mr. E. L. Layard states that this species breeds in Mauritius, in the inaccessible sides of the ravines, where, from a curious projection called the "World's End," he often saw them entering the crevices of the rocks on either side. This bird also breeds in hollow trees, and it could frequently be seen flying over the forest and darting into the holes caused by the fall of rotten branches. The first pair he obtained had for several years frequented a large tree, on striking which the birds flew out and were shot. The season was too far advanced to admit of his procuring any of their eggs.

Mr. Edward Newton, in his visit to the Seychelles Archipelago, near Mauritius, in ascending a mountain, observed this species — the local name of which is *Paille en queue* — soaring overhead. In his ascent he had seen one enter a hole in the stump of a dead capuchin-tree about a quarter of a mile off, and on his return he sought the place. The hole was about fifteen feet from the ground; and his assistant ascended to it, finding only a young bird, which Mr. Newton took home and tried to rear, but without success.

This species is frequently mentioned as occurring at various localities visited during the voyage of the Wilkes Expedition, and is thus shown to be a widely distributed species. Mr. Peale states that it has been occasionally seen on the southern sea-coast of the United States. Soon after the Expedition left Chesapeake Bay, and when in lat. 38° 13′ N., long. 60° 35′ W., this bird was met with; which is probably the northern limit of its range. He expresses a belief that a few of this species breed on that part of our coast; as he has known young birds, just fledged, to be killed on the Potomac in the month of October. It was also frequently seen in the Pacific Ocean, but never so far to the north. It was always seen in the greatest abundance near high islands, breeding in holes made in the face of rocky precipices. In the mountainous regions of Tahiti it is quite numerous.

Dr. Henry Bryant found the Tropic-bird breeding in the Bahamas, where he visited three breeding-places. At Long Rock, near Exuma, it breeds in holes in the horizontal surface of the rock, as also at Water Key, one of the Ragged Island Keys; at Cayo Verde — which is about thirty miles east of Great Ragged Island — in holes in the perpendicular faces of the cliffs, and also in the horizontal surface of the rock. Before the depositing of the egg the pair occupy the same hole; but afterward only one bird is found. Both sexes incubate. On the 20th of April about half had begun to lay, and only a few eggs had been sat on three or four days; most of them had been freshly laid. The birds feed from early daylight until about nine o'clock, when they return to their holes, in which they pass the hotter part of the day, again leaving them toward sunset in search of food. The holes chosen are seldom shallow, and are often so winding that, though its harsh note can be heard within, the bird can only be procured by demolishing the rock. In their habits the Phaëtons closely resemble the Terns, as they do also in their mode of flight and external appearance. When flying, the long feathers of the tail do not separate. If their breeding-places are approached when the parent birds are out of their holes, they hover over the intruder, screaming and darting at him in the manner of the Terns. The single egg is large for the size of the bird, whitish, covered almost entirely with reddish chocolate-colored spots, finely dotted over the surface; and these marks may be easily rubbed off. They measure 2.09 inches in length by 1.65 in breadth. The egg was sometimes deposited on the bare rock, and sometimes on a few twigs — which may, however, have accidentally fallen into the hole.

Eggs of this species in the Smithsonian Collection (No. 1859), obtained in the Bermudas by Mr. J. H. Darrell, have a ground-color of a purplish brownish white, marked with fine spots and sprinkled with deep claret-brown — in some so dark as to approach blackness. They are 2.10 inches long, and from 1.45 to 1.55 inches in breadth.

Phaëthon æthereus.

THE RED-BILLED TROPIC BIRD.

Phaëthon æthereus, LINN. S. N. I. 1758, 134; ed. 12, 1766, 219. — BODD. Tabl. P. E. 1783, 58 (ex Pl. Enl. 998). — SEMPER, P. Z. S. 1872, 653 (St. Lucia, W. I.). — SALVIN, Trans. Zool. Soc. Lond. IX. ix. 1875, 497 (Tower I. Galapagos). — RIDGW. Nom. N. Am. B. 1881, no. 655. — COUES, 2d Check List, 1882, no. 762.

Phaëton Catesbyi, BRANDT, Mem. Ac. St. Petersb. 1840, Sc. Nat. III. 270.

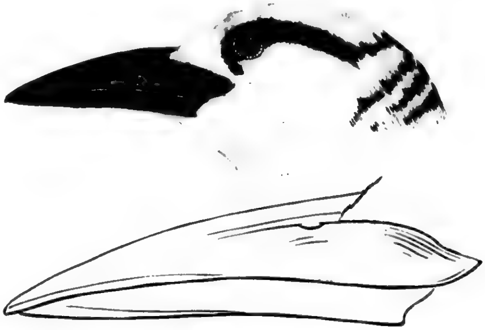
? *Phaëton melanorhynchas*, GMEL. S. N. I. ii. 1788.

HAB. Coasts of tropical America. Socorro Island, Western Mexico, and Gulf of California; casual near Newfoundland Banks.

SP. CHAR. Bill deep coral-red. *Adult:* Prevailing color satiny white; a broad crescent immediately in front of the eye, and a stripe behind it, extending back to the occiput (sometimes meeting behind), longer scapulars (except edges), greater portion of the primary-coverts, and outer webs of four to six outer primaries (except at ends), deep black; nape, back, scapulars, rump, and upper tail-coverts, narrowly and rather irregularly barred with blackish plumbeous; flanks broadly striped with plumbeous. Elongated central rectrices pure white, the shafts blackish toward the base. Bill deep coral-red; iris brown; tarsi and base of feet, to first joint of toes, including nearly the whole of the web between inner and hind toes, yellow (orange in life?); remainder of feet black.

Total length about 30 to 35 inches; wing, 11.75–12.50; elongated middle rectrices, sometimes 22.00; culmen, about 2.50.

This species occurs along the Pacific coast of South America, and in the West Indies, though it has not — so far as I am aware — been taken within our waters. It occurs, however, in the vicinity of Cape St. Lucas, and is therefore entitled to a place in the present work. Mr. Xantus found it on the coast of Michoacan. Colonel Grayson met with it in the Gulf of California, and also far out at sea, and he subsequently found it breeding on Isabella Island, near San Blas, where he obtained its eggs (National Museum, No. 15513). Their ground-color is a creamy white, with a purplish tinge, minutely sprinkled with dots of neutral tint and claret brown. Three specimens gave the following measurements: 2.35 by 1.55 inches; 2.40 by 1.70; 2.30 by 1.70.



ORDER LONGIPENNES.

THE LONG-WINGED SWIMMERS.

CHAR. Nostrils lateral and perforate, never tubular; covering of the bill simple, or broken only by a sort of imperfect cere (in *Stercorariidæ*). Tip of the maxilla never strongly hooked, often straight. Hallux generally well developed, but small and elevated, sometimes rudimentary. Basipterygoid bones absent. Eggs several, colored. Habit highly volucral.

The following groups, which it seems to us should rank as families, have usually had only the value of sub-families assigned them. They are so very strongly marked, however, that no intermediate forms are known.

A. *Covering of the bill simple.*
  1. **Rhynchopidæ.** Bill much longer than the head, excessively compressed, except at the extreme base, the mandible much longer than the maxilla, both broad and nearly truncate. Tail much shorter than the wing, forked. Legs and feet extremely small.
  2. **Laridæ.** Bill rarely longer than the head (usually shorter), moderately compressed, or sometimes nearly cylindrical, pointed, the maxilla always longer than the mandible. Tail variable in length and shape. Legs and feet of proportionate size.

B. *Covering of the bill compound.*
  3. **Stercorariidæ.** Bill shorter than the head, the terminal half of the culmen strongly curved, the basal half consisting of a horny cere, beneath the overhanging edge of which the nostrils are situated. Feet rather strong, the claws well developed, rather strongly curved. Tail nearly even, but the intermediæ more or less prolonged beyond the other rectrices, their tips rounded or pointed, according to the species.

FAMILY RHYNCHOPIDÆ. — THE SKIMMERS.

CHAR. Bill compressed to knife-like thinness, except at the extreme base, the mandible much longer than the maxilla, the latter freely movable. Nostrils basal, inferior. Wings extremely lengthened. Tail about one third the wing, slightly forked. Legs and feet extremely small.

The peculiarities of form expressed in the characters given above render this very remarkable type worthy, according to our views, of family rank, as distinguished from the Gulls and Terns, the most widely different forms of which are perfectly united by the interposition of a graduated series of intermediate forms, while between *Rhynchops* and any of the *Laridæ* there exists a very wide gap. The family is composed of the single genus *Rhynchops*.

Genus RHYNCHOPS, Linnæus.

Rynchops, Linn. S. N. ed. 10, I. 1758, 228; ed. 12, I. 1766, 228 (type, *R. nigra*, Linn.).
Rhynchops, Lath. Ind. Orn. II. 1790, 802.

Char. Same as those of the family.

The genus *Rhynchops* contains only three species, so far as known; the *R. nigra*, peculiar to America; *R. flavirostris*, Vieill., of the Red Sea, and *R. albicollis*, Swains., of India. We have not been able to examine either of the exotic species, but upon examining an excellent colored plate of *R. albicollis* in Gray and Mitchell's "Genera of Birds" (Vol. III. pl. clxxxi.), we are unable to appreciate any point wherein it differs from the winter plumage of *R. nigra*.

R. nigra.

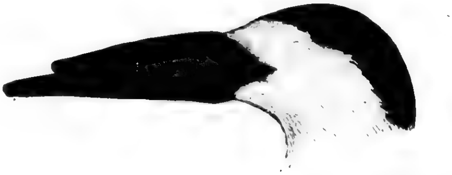
Rhynchops nigra.

THE BLACK SKIMMER.

Rynchops nigra, Linn. S. N. ed. 10, I. 1758, 228; ed. 12, I. 1766, 228.
Rhynchops nigra, Lath. Ind. Orn. II. 1790, 802. — Lawr. in Baird's B. N. Am. 1858, 866. — Baird, Cat. N. Am. B. 1859, no. 697. — Coues, Key, 1872, 324; Check List, 1873, no. 577; 2d ed. 1882, no. 809; Birds N. W. 1874, 715. — Ridgw. Nom. N. Am. B. 1881, no. 656.
Rynchops fulva, Linn. S. N. I. 1766, 229 (young?).
Rhynchops cinerascens, Spix, Av. Bras. 1826, pl. 102 (young).
Rhynchops brevirostris, Spix, Av. Bras. 1826, pl. 103 (young).
? *Rhynchops melanurus*, "Boie," Swains. Anim. in Menag. 1838, 340 (Demerara).
Rhynchops borealis, Swains. l. c.

Hab. Warmer parts of America, south to 45° S., north, along the Atlantic coast, to New Jersey (regularly), or even Maine (casually). Both coasts of Central America.

Sp. Char. *Adult:* Forehead, lores, cheeks, and entire lower parts, from chin to crissum, inclusive, with axillars, lining of the wing, lateral upper tail-coverts, and ends of secondaries and inner primaries (broadly), pure white; rest of the plumage, including upper parts in general, with auriculars, dusky black. Tail white, the shafts of the feathers brownish on the upper surface, the intermediæ grayish brown edged with white, the other rectrices more or less tinged at ends with the same. Basal half (approximately) of the bill bright vermilion, the mandible more scarlet, shading into yellowish on the tomium; terminal portion black; iris dark brown; legs and feet rich orange-vermilion, claws black. *Adult, in winter:* Similar, but the black more brownish, and interrupted by a broad nuchal collar of white. *Young, first plumage:* Upper parts light buff, each feather with a central spot of black, these spots largest on the scapulars; lores and suborbital region uniform pale buff; a space immediately before and behind the eyes, dusky. Greater wing-coverts slate-black, tipped with white; secondaries pure white for nearly the whole of the exposed portion; primaries black, the fourth, fifth, and sixth bordered terminally with light buff, the four inner quills dusky, passing gradually into white at the ends. Lower parts entirely pure white. Bill and feet reddish dusky. *Downy young:* Above, very pale grayish buff, irregularly and sparsely mottled with blackish; below, immaculate white.



Adult male: Total length, about 17.00 to 20.00 inches; extent, 48.00; wing, 14.75–15.75; tail, 5.50, its fork, about 1.20; culmen, 2.55–2.80; gonys, 3.40–4.70; tarsus, 1.30; middle toe, .80–.85. *Adult female:* 15.25 to 16.75, 44.50, 13.50–14.25, 4.40–5.00, 2.00–2.30, 2.45–3.00, 1.15–1.20, .75.

As a rule, South American specimens are larger than those from North America, the bill especially being much longer. Thus, in a series of eight adult examples from northern localities, the mandible measures from 2.90 to 4.10 inches in length (measuring from the chin), while in three skins from South America, and one each from Guatemala and Nicaragua, the same measurement ranges from 4.50 to 4.70 inches. In an adult male from Conchitas, Buenos Ayres, however, the mandible is only 3.25 in length; while in another from Peru (No. 15511; Captain WILKES) it measures 3.60, and is remarkably narrow. This specimen has the tail wholly uniform dusky. We have not been able to discover any constant differences of coloration between northern and southern birds of this species. There is much variation as regards the color of the tail, which in some is wholly a uniform dusky-brown color; in others (older birds?) the tail is white, only the intermediæ being brownish, and these with a broad edging of white. Other specimens are variously intermediate in this respect, so that this variation is probably due to age.[1] Audubon ("Birds of America," VII. 73) says that in the young, "after the first autumnal moult, there is on the hind part of the neck a broad band of white, mottled with grayish black;" the upper parts of

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[1] According to M. Taczanowski, in "Proc. Zool. Soc. Lond.," 1874, pp. 562, 563, Peruvian specimens differ constantly in several respects from North American examples, and to such an extent that he considers them specifically distinct. He says: "These birds are so different from *R. nigra* that it is impossible to confound them. The length of the wing presents the greatest difference: that of the Peruvian species exceeds the wing of *R. nigra* by sixty millim. The bill is much larger and stronger. The coloring also presents several differences; the principal consists in the complete absence of the white speculum on the wing, which in the North American bird occupies the terminal half of the secondary quills. The white demi-collar on the neck also is wanting in our bird, being indicated only by a little paler color than that of the surrounding parts. The under wing-coverts are not white, but brownish gray; the forehead, sides of the face, and front part of the throat are more or less clouded with gray. The whole tail is blackish brown, the rectrices with a clear border.

"M. Jelski has indicated on the labels that the pupil is not round, but vertical, as in the cat. Dimensions of a male: —

	Millim.		Millim.
Length of folded wing	415	Length of maxilla	105
" the tail	136	" tarsus	35
" the bill from the gape .	135	" middle toe with claw .	30"

a duller black, and the bill and feet less richly colored than in the adult. A specimen from Matamoras (No. 4167), evidently a young bird, in much worn and apparently faded plumage, has the black replaced by brownish gray (this very pale on the head above), while all the wing-coverts are conspicuously tipped with white.

The females are uniformly much smaller than the males, but exactly the same in colors, the fresh tints of the bill and feet being equally bright.

This unique and very peculiar species, variously known as the "Razor-bill," the "Cut-water," the "Shearwater," and the "Black Skimmer," is found on our Atlantic coast from Long Island to Southern Brazil, and also on the Pacific coast; but to what extent I am not able to state. Dr. Burmeister speaks of it as being common on the Rio Parana, especially among the lagoons near the river, where this singular bird, in the manner so well described by Azara, fishes for its prey, making long furrows through the water — a peculiarity which causes it to be generally known by the name of *El Rayador*. Mr. Xantus procured this species on the Zacatula River, in Western Mexico; and Colonel Grayson noticed it during the summer months near San Blas. He speaks of it as not being abundant, and as partly nocturnal in its habits.

Mr. C. B. Brown met with it in the rivers of British Guiana, especially on the Essequibo, where, as he states, the "Scissor-billed Gulls," or "Sea-dogs," were frequently seen flying swiftly along in small parties, with their long sharp flat beaks dipping in the water. Their cries resembled somewhat the barking of a dog; hence they have received the name of Sea-dogs.

According to the observations of Mr. Giraud, this is one of the regular visitants of Long Island — where, however it is not very common. At Egg Harbor, on the coast of New Jersey, it is much more abundant, and has been known to breed there.

Birds of this species associate in small parties, and pass most of their time on the wing — flying very low at a short distance from the shore. Giraud has never known them to alight on the water; but they may usually be seen skimming over its surface, ploughing it with their long bills, seemingly in pursuit of small fish, on which they feed. They are never known to dive, and they apparently only take their prey when this comes to the surface of the water.

The voice of this Gull is a harsh scream, somewhat resembling the cry of the Tern, but is stronger. When fishing this bird flies steadily and slowly, flapping its long wings. At other times its flight is exceedingly swift. It is not known to breed on Long Island, where it is rarely seen except at midsummer.

Its nest is a mere hollow formed in the sand, without the addition of any materials. The female lays three eggs, almost exactly oval, of a dirty white, marked with large spots of brownish black intermixed with others of a pale India-ink. These measure 1.75 inches in length by 1.25 in breadth. It is said that half a bushel and more of these eggs have sometimes been collected from one sandbar within the compass of half an acre. Giraud states that he found them to have something of a fishy taste; yet they are eaten by many people on the coast. The female sits on them only during the night, or in wet and stormy weather. The young remain unable to fly for several weeks after they are hatched; and during this time they are fed by both parents with remarkable assiduity — seeming to delight in lying with half-opened wings flat on the sand, as if enjoying its invigorating warmth. This bird breeds but once in a season, and is much later in depositing its eggs than are other water birds. In my visit to Cape Charles, in June, 1852, while these birds were present in considerable numbers, they showed no signs of breeding, although their companions of various kinds had all full complements of eggs.

Mr. N. B. Moore, living near Sarasota Bay, Fla., writes me that he has seen small and scattered parties of this species skimming over the quiet waters of the lagoons and flooded flats, at high tide, in the middle of the day, near the sea-shore, procuring food; while a flock of from fifty to a hundred were basking in the sunshine on an island sandflat near by. One of these birds was observed to take a fish which seemed too large to be readily swallowed, and which it carried to a sandbar, and then perched among its fellows.

In the autumn the Razor-bills are seen to quit their basking-grounds a little after sunset, and all fly off in a southerly direction. They skim low over the water; and if the surface is smooth when they come upon a shoal of small fry, they settle down a little, lower the long under-jaw into the water, and at the same moment cease to beat the air, but elevate the open wings, and thus move on for a considerable distance. They only carry their bill in the water when there is an immediate prospect of abundant prey. They return in the morning from their roosting-places, flying in the same manner as in the evening, but higher, and seem to be less inclined to feed while on their way. They are said to proceed to Charlotte Harbor to pass the night and to feed; this is distant fifty miles or more. But these statements have not been positively verified. Mr. Moore has never known them to fly over the land, as Gulls and Terns are often seen to do.

Mr. Salvin met with this species at the lagoon of Acapam, on the Pacific coast of Guatemala; and Professor Newton mentions seeing a single example, on the 14th of June, 1838, between St. Thomas and St. Croix; it passed close to the vessel on the deck of which he was standing at the time.

Mr. C. W. Wyatt, in an account of the birds of Colombia, South America, states that while he was waiting at the Digue, on the banks of the Magdalena River, he had several opportunities of watching this curious bird as it flew over the shallows by the sandbanks, or ploughed the water and the mud with its scissor-shaped bill. It was not seen by him on the lower portion of the Magdalena.

Léotaud cites this species as an irregular visitant of the Island of Trinidad, there being frequent intervals during which it is not seen there; and when it does come it is regarded as the sure herald of the wintry rains. It is preceded in its migrations by all the other birds visiting that island at that season.

Audubon regarded this bird as being largely nocturnal in its feeding; and says that it sometimes spends the whole night on the wing, diligently searching for food. Although silent when beginning this occupation, it becomes more and more noisy as darkness draws on; its call-notes resemble the syllables *hurk-hurk*, repeated at short intervals. The same writer states that while at Galveston Island he saw three Razor-bills pursue a Night Heron several hundred yards, as if intent on overtaking it; their cries during the chase resembling the barking of a very small dog.

The flight of this bird is remarkable for its elegance, and for the vigor with which it is maintained against even the most violent gale. It is never known to be driven astray by any storm, however violent.

The Notes of Dr. Berlandier, of Matamoras, show that he regarded this as being a rare species on the Mexican coast; he met with only a single example in the neighborhood of Tampico. He states that it inhabits the salt lakes and the shores of the Gulf of Mexico between the Tropics, delighting in lonely shoals and marshy places. It is known to the French as *Le Bec en Ciseau*, and to the Spaniards as the *Pescador*. It does not feed solely upon shellfish and mollusks, but is found on the edge of lakes around Matamoras, where there are very few mollusks, and where it hunts for fishes.

Dr. Bachman informed Audubon that this bird is very abundant and breeds in great numbers on the sea-islands at Ball's Bay, S. C., where twenty thousand nests could be seen at one time. The sailors collected enormous numbers of their eggs, the birds screaming unceasingly. Whenever a Pelican or a Turkey Buzzard passed near they assailed the intruder by hundreds, and drove it fairly out of sight. The Razor-bill forms no other nest than a slight hollow in the sand. The eggs are always three, having a pure-white ground, largely blotched and patched with very dark umber, with here and there a large spot of an obscure purplish tint. The young are at first of the same color as is the sand on which they lie; and are not able to fly until five or six weeks after being hatched.

If this bird is shot at and wounded, and then falls into the water, it is easily secured, as it cannot dive. At such a time its cries excite the sympathy of its fellows, who crowd around it as Terns do under similar circumstances.

Specimens of the egg of the Razor-bill in the Smithsonian collection, from Hog Island, Va., and from Florida, vary in their length from 1.70 to 1.80 inches, and in their breadth from 1.30 to 1.40. Their ground-color is a pale buff or buffy white; the markings are large, longitudinal, and of a conspicuous blackish brown, intermingled with subdued spots of umber and lavender-gray. The ground-color of South American examples is a very deep drab.

FAMILY LARIDÆ. — THE GULLS AND TERNS.

CHAR. Bill moderately compressed, or sometimes nearly cylindrical, its covering entire; the tip of the maxilla overhanging, or at least meeting, that of the mandible; the culmen more or less curved, but never arched terminally — sometimes nearly straight throughout; symphysis of the mandible usually forming more or less of an angle, this, in most cases, prominent in proportion to the relative depth of the bill; nostrils sub-basal, perforate; legs and feet of proportionate size. Tail extremely variable in form and length.

Although including among its very numerous members great extremes of size and form, the family *Laridæ* as here restricted is not divisible into more than two sub-families; and these are so nearly united through certain forms as to be really more artificial than natural. They may, with considerable difficulty, be defined as follows: —

Larinæ. Depth of the bill through the angle decidedly greater than through the middle of the nostrils; terminal portion of the culmen decidedly curved; mandibular angle frequently prominent, always distinct. Tail even, except in *Xema* (forked) and *Rhodostethia* (wedge-shaped). Size extremely variable, but usually medium or large; sometimes very large.

Sterninæ. Depth of the bill through the angle (symphysis of the lower jaw) less than through the middle of the nostrils; terminal portion of the culmen slightly curved, or nearly straight; mandibular angle seldom prominent. Tail forked, except in *Anous* (graduated). Size extremely variable, but usually small; never very large.

In probably no other group of birds are there so many and great extremes of form connected by imperceptible transitions, as among the *Laridæ*. Owing to this fact, the genera are exceedingly difficult of definition, unless restricted to the smallest possible number, some of those thus comprehended containing a considerable number of "sub-genera," many of which are almost, if not quite, sufficiently different in form or size to be of generic distinctness. The genus *Larus*, for instance, in its most comprehensive sense includes both the gigantic *L. marinus* and the pigmy *L. minutus*; the latter smaller than many Terns, the former approaching an Albatross in size; while the difference in form is not less striking than that of size. The genus *Sterna* offers scarcely less of a contrast between the large, Gull-like *S. caspia* and the minute *S. antillarum.* In order to separate the more marked variations of form in either of these genera, however, it would be necessary to name a larger number of subdivisions than most authors would recognize as distinct genera. Notwithstanding this fact, we are convinced that, while such a procedure undoubtedly simplifies the nomenclature, it by no means expresses the true relationship of the forms so designated to call all the square-tailed Gulls (excepting *Pagophila* and *Rissa*) *Larus*, and all the fork-tailed Terns with fully webbed-feet *Sterna.* In fact it is only from want of suitable material that we have not attempted a subdivision of the genera *Larus* and *Sterna* in their comprehensive sense. Allowing, therefore, each the fullest possible scope, we submit the following analysis of the North American genera of *Laridæ:* —

Larinæ.

1. **Pagophila.** Tail even; hind toe perfectly developed, though small; tarsus shorter than the middle toe and claw, serrate behind. Color entirely white, the young sparsely spotted with dusky. Size medium.
2. **Rissa.** Tail even, or slightly emarginate; hind toe rudimentary, or altogether absent; tarsus much shorter than the middle toe without its claw, not serrate behind. Above, pearl-blue, beneath white; young similar, but with a black nuchal patch (and in one species a black shoulder-patch). Size medium.
3. **Larus.** Tail even; hind toe always well developed; tarsus always longer than the middle toe with its claw, not serrate behind. Size and coloration extremely variable, but young always very different from the adults.
4. **Rhodostethia.** Tail graduated, or wedge-shaped. Size small. Adult pearl-blue above, rosy white beneath and on head and neck, the latter encircled by a black collar.
5. **Xema.** Tail forked. Size small. Adult pearl-gray above, white beneath, including the neck all round, the head dusky.

Sterninæ.

6. **Sterna.** Tail decidedly forked; webs of the toes filling the greater part of the interdigital spaces, but both with a concave or scalloped anterior outline. Size extremely variable.
7. **Hydrochelidon.** Tail emarginate; webs of the toes very deeply scalloped, occupying much less than half the interdigital space. Size small.
8. **Anous.** Tail graduated, or wedge-shaped; webs of the toes completely filling the interdigital spaces, and scarcely or not at all scalloped in front.

GENUS **PAGOPHILA**, KAUP.

Gavia, BOIE, Isis, 1822, 563 (type, *Larus eburneus*, PHIPPS).[1]
Pagophila, KAUP, Nat. Syst. Eur. Thierw. 1829, 69 (type, *Larus eburneus*, PHIPPS).
Cetosparactes, MACGILL. Man. Brit. Orn. II. 1842, 251.

CHAR. Size medium; tail even; hind toe well developed, though small, the nail relatively large; tarsus shorter than the middle toe and claw, roughly granular or almost serrate behind; color entirely white in the summer adult; white, sparsely spotted with dusky, in the winter plumage (and young?).

The genus *Pagophila* contains but one well established species, although several nominal ones have been recognized, all of which were probably based upon special stages, or somewhat abnormal individuals, of *P. eburnea.*

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[1] It is quite probable that a proper adherence to the rules of nomenclature will require the use of *Gavia* for this genus instead of *Pagophila*; but at present we are unwilling to make the change. (Cf. STEJNEGER, "Proc. U. S. Nat. Mus." Vol. 5, p. 39.)

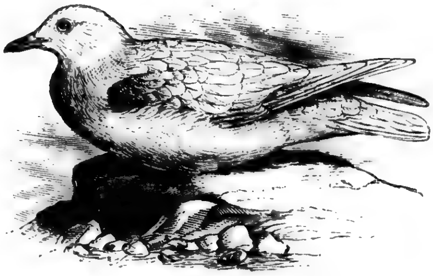
Pagophila eburnea.

THE IVORY GULL.

Larus albus, GUNN. in Leem, Beskr. Finm. Lapp. 1767, 285. — SCHÄFF. Mus. Orn. 1789, 65, tab. 42.
Gavia alba, STEJN. Pr. U. S. N. M. Vol. 5, 1882, p. 39.[1]
Larus eburneus, PHIPPS, Voy. N. Pole, App. 1774, 187. — NUTT. Man. II. 1834, 301. — AUD. Orn. Biog. III. 1835, 571; Synop. 1839, 326; B. Am. VII. 1844, 150, pl. 445. — COUES, Key, 1872, 313; Check List, 1873, no. 550.
Pagophila eburnea, GRAY, App. List, Gen. B. 1842, 15. — LAWR. in Baird's B. N. Am. 1858, 836. — BAIRD, Cat. N. Am. B. 1859, no. 676. — SAUNDERS, P. Z. S. 1878, 162 (synonymy, etc.).
Larus (*Pagophila*) *eburneus*, BRUCH, J. f. O. 1853, 106. — COUES, B. N. W. 1874, 648.
Larus candidus, MÜLLER, Prod. Zool. Dan. 1776, p. viii.
Larus niveus, BODD. Tabl. P. E. 1783, 58, no. 994.
Larus brachytarsus, HOLBÖLL, Fn. Grœnl. 1846, 52.
Larus (*Pagophila*) *brachytarsus*, BRUCH, J. f. O. 1853, 106. — LAWR. in Baird's B. N. Am. 1858, 856. — BAIRD, Cat. N. Am. B. 1859, no. 677.

HAB. Circumpolar seas, south in winter on the Atlantic coast of America to Labrador, Newfoundland, and (rarely?) New Brunswick. No Pacific coast record.

SP. CHAR. *Adult:* Entirely pure white, the shafts of the primaries pale yellowish. Bill yellowish green, the terminal third yellow; iris brown; eyelids vermilion-red; legs and feet black.



P. eburnea.

Young: Similar, but anterior part of the head tinged more or less with brownish gray,[2] the remiges, rectrices, primary coverts, and longer scapulars marked terminally by a spot of dusky, the lesser wing-coverts marked centrally by smaller spots of the same. "Bill black, clouded with pale yellow; legs and feet black" (L. KUMLIEN, MS.).

Total length, about 17.00–19.50 inches; wing, 13.25; culmen, 1.40; depth of bill through nostrils, .45; tarsus, 1.45; middle toe (with claw), 1.75.

Audubon mentions this species as occasional on the coasts of the United States, and was also informed that it is not uncommon on the coasts of Labrador and Newfoundland during the winter. During the summer months it is found only in high northern latitudes, and generally only far out to sea.

According to Yarrell, several individuals of this species have been taken from time to time on the coasts of Great Britain and Ireland. The first known instance of this kind occurred in Balta Sound, Shetland, in 1822; and another happened soon after in the Firth of Clyde. In 1834 a similar occurrence was noted by Mr. Sabine on the western coast of Ireland; and another has since been recorded near Galway. More recently there have been several of these birds obtained in Great Britain. Temminck with his own hands shot one on the coast of Holland. Vieillot records this species as having appeared on the coast of France. Nilsson states that it is seen occasionally in winter both in Sweden and in the northern part of Scandinavia. It is given by Middendorff as one of the birds of Siberia, where it is said to be found only in the extreme north.

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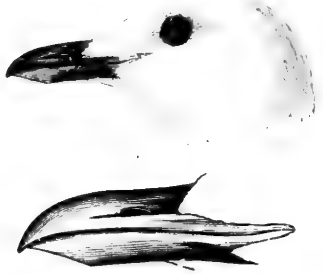
[1] The same remarks apply to this as to the name of the genus, as explained in footnote on p. 197.

[2] This perhaps an accidental stain.



Messrs. Evans and Sturge, in their paper on the Birds of Western Spitzbergen, state that of the beautiful snow-white Ivory Gull they saw only six or seven individuals; and although both of the examples that they killed had their bellies bare of feathers, as is the case with sitting birds, all endeavors to find where they were breeding failed. The sailors asserted that this bird was never seen excepting upon ice; and in only one instance was this statement proved to be incorrect.

Professor Alfred Newton, in his Notes on the Birds of Spitzbergen, referring to this species, remarks: —

"The Ivory Gull is, of all others, the bird of which every visitor to Spitzbergen will carry away the keenest recollection. One can only wish that a creature so fair to look upon was not so foul a feeder. Contrary to the experience of all other observers, I once saw an Ivory Gull, of its own accord, deliberately settle on the water and swim. This was in the Stor Fjord. There is a very great variation in the size of different examples, which is not to be attributed to sex nor to age; but I do not for one moment countenance the belief in a second species, which some ornithologists have endeavored to establish under the name of *P. brachytarsa*."

The Swedish expedition to Spitzbergen in 1861 obtained some eggs of this species; and these were the first well-authenticated specimens taken to Europe. I transcribe what Dr. Malmgren says about them: —

"On the 7th of July, 1861, I found on the north shore of Murchison Bay, lat. 80° N., a number of Ivory Gulls established on the side of a steep limestone precipice, some hundred feet high, in company with the *Rissa tridactyla* and *Larus glaucus*. The last-named occupied the higher zones of the precipice. The *Larus eburneus*, on the other hand, occupied the niches and clefts lower down, at a height of from fifty to a hundred feet. I could plainly see that the hen birds were sitting on their nests; but these were inaccessible. Circumstances did not permit, before the 30th of July, my making the attempt, with the help of a long rope and some necessary assistance, to get at the eggs. With the assistance of three men I succeeded in reaching two of the lowest in situation; and each contained one egg. The nest was artless and without connection, and consisted of a shallow depression eight or nine inches broad, in a loose clay or mould, on a sublayer of limestone. Inside, the nest was carefully lined with dry plants, moss, grasses, and the like, and a few feathers. The eggs were much incubated, and already contained down-clad young. Both of the hen-birds were shot upon their nests, and are now in the National Museum. The male birds were at first observable, but disappeared when we began the work of reaching their nests."

Professor Newton believes that the Ivory Gull breeds sporadically on many other parts of Spitzbergen proper. Several of the birds shot in Ice Sound and the Stor Fjord had their bellies bared of feathers, as is the case with sitting birds; and his pilot informed him that a ship's boat, which in 1857 succeeded in reaching Gilies Land, found the nests of many Ivory Gulls on its lonely shore. This bird probably does not always breed in colonies; and as it selects the inaccessible places, an occasional nest here and there on the mountains or crags might well escape notice.

Professor E. Percival Wright ("Ibis" 1866, p. 216) states that Commodore McClintock, on his return from the Arctic expedition of 1852–1853, among the very few specimens of natural history he was able to retain, brought home with him one egg of the Ivory Gull. An extract from McClintock's Diary is given, from which it appears that from the 12th to the 15th of June he examined the Polynia Islands, lat. 78°, which are composed entirely of gravel, none of them being more than sixty feet above the sea. Upon one he saw two old nests of this species. They were chiefly made of moss, and a larger quantity of this material had been used in their construction than he had seen growing upon the whole group. The broken pieces of eggshells which the nests contained were of a pale olive color, with irregular dark-brown blotches. On the 18th of June, as he was rounding Cape Krabbe, on the east shore of Prince Patrick's Island, he saw an Ivory Gull sitting on her nest, on a bare patch of gravel near the beach. There was a single egg in the nest, which was exactly like those seen on the Polynia Islands; only, in addition to the moss, there was a little white down, and also a few feathers in it. This egg is now in the Museum of the Royal Society of Dublin.

Mr. G. Gillett found this species in abundance on Nova Zembla wherever there was ice. He did not see any of its breeding-places, nor could he detect any other than adult birds. He mentions having frequently seen them settle on the water. Von Heuglin reports this bird as being present, but in small numbers, in Matthews Strait and along the west coast of Nova Zembla.

Dr. Alexander Carte contributed to the Dublin Royal Society a paper relative to the nidification of this species, in which this bird is mentioned as being almost exclusively resident in the Arctic Regions of both hemispheres, seldom visiting more temperate climes. In addition to those instances of its occurrence in England and elsewhere which have already been mentioned, Dr. Carte cites eight others of its being taken in other parts of Great Britain, and still others of its capture in Ireland. Captain Scoresby is quoted as characterizing it as being quite as ravenous as the Fulmar, and as little nice in the choice of its food. It is, however, somewhat more cautious than that bird; and while it is a constant attendant on the operations of the whale-fishers, it generally seizes its portion on the wing. It rarely alights on the water, but often sits on the ice, preferring the most elevated situations. Its cry is a loud and disagreeable scream. Captain McClintock, in his Diary, mentions that, in lat. 77° N., long. 116° W., he discovered around a nest of this bird the remains of the bleached bones of the *Myodes hudsonius*, and also fresh pellets consisting of their hair and bones, showing that this bird preys upon that animal.

Sir John Richardson saw this Gull breeding in great numbers on the high perforated cliffs that form the extremity of Cape Parry, in latitude 70°; but he was unable to obtain any specimens of its eggs. A quotation is given from the Diary of Captain McClintock, in which he mentions meeting with three species of Gull in the Arctic Regions, the Ivory Gull appearing the earliest of all, and being found the farthest north. The first seen and shot was on the 12th of June, in lat. 77° 45′ N., long. 116° W. Eight were noticed, all of them on Prince Patrick's Land.

Mr. Kumlien states that this Gull was very common in Kingwah Fiord and its vicinity, just before the closing of the ice, for a few days only; none were seen in the spring. It is by no means common on the Greenland coast. The stomachs of all the examples which were secured contained small crustaceans; these Gulls do not, however, restrict themselves to this food, but are very fond of meat, and especially of the flesh of the seal and whale.

Dr. Walker mentions meeting with this species about Godthaab; and it is given by Professor Reinhardt as being included among the resident species of Greenland. Mr. Proctor informed Professor Alfred Newton ("Ibis," 1864) that he had on two occasions received specimens of it from Iceland. It is known to frequent Davis Straits, Baffin's Bay, and various parts of the northern shores of the continent, where it is a constant attendant upon the whale-fishers, and preys upon the blubber.

Mr. H. W. Feilden ("Ibis," Oct. 1877) speaks of this Gull as being one of the birds most frequently observed in Smith's Sound, but as not met with beyond latitude 82° 20′. He found a pair of them nesting in a lofty and inaccessible cliff near Cape Hayes on the 16th of August, 1875. On the 1st of September a single example flew around the "Alert" as she lay moored in the ice in Lincoln Bay, latitude 82° 6′. On the 2d of August, 1876, he observed one near Cape Union; and on the 12th of August they were common in Discovery Bay, and from there southward to the north water of Baffin's Bay. This species is also enumerated by Dr. Bessels among the birds taken in the Polaris Expedition, under Captain Hall — probably in Polaris Bay.

The egg of this Gull obtained by Captain McClintock is represented in a colored plate in the "Proceedings of the Royal Society of Dublin." It is 2.45 inches in length and 1.70 in breadth, of an oblong-oval shape, and slightly more obtuse at one end than at the other. It has a ground color of a light yellowish olive, marked over its entire surface with small blotches of a dark brown, intermingled with others of a lighter and more obscure brown, and with larger cloudings of a faint lilac.

GENUS **RISSA**, LEACH.

Rissa, LEACH, Stephen's Gen. Zool. XIII. 1825, 180 (type, *Larus rissa*, BRÜNN. = *L. tridactylus*, LINN.).

CHAR. Size medium; tail even, or very faintly emarginate; hind toe rudimentary, or entirely absent, the nail usually obsolete; tarsus much shorter than the middle toe without its claw, not rough or serrate behind. Above, pearl-blue, beneath, white, the young with a black nuchal patch (and in *R. tridactyla* a black shoulder-patch).

Only two species of *Rissa* are known, both of which belong to the North American fauna. They may readily be distinguished by the following characters: —

1. **R. tridactyla.** Legs and feet black; wing, about 12.25 inches; culmen, 1.40–1.50; depth of bill at base, .59; tarsus, 1.30; middle toe with claw, 1.80. *Hab.* Northern portion of northern hemisphere.
2. **R. brevirostris.** Legs and feet deep coral- or vermilion-red (drying yellowish); wing, about 13.00 inches; culmen, 1.20; depth of bill through base, .50; tarsus, 1.25; middle toe with claw, nearly 2.00. *Hab.* North Pacific, particularly the American side.

Rissa tridactyla.

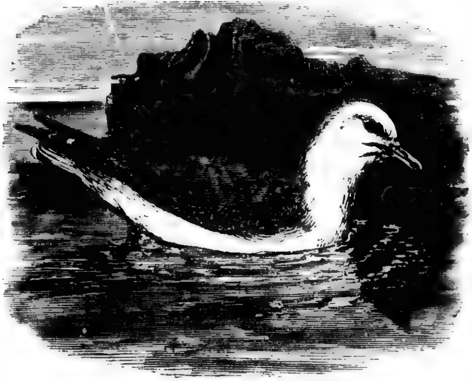
THE KITTIWAKE GULL.

a. Tridactyla.

Larus tridactylus, Linn. S. N. ed. 10, I. 1758, 136; ed. 12, I. 1766, 224. — Sw. & Rich. II. 1831, 423. — Nutt. Man. II. 1834, 298. — Aud. Orn. Biog. III. 1835, 186, pl. 224; Synop. 1839, 326; B. Am. VII. 1844, 146, pl. 444. — Coues, Key, 1872, 314; Check List, 1873, no. 552.
Rissa tridactyla, Bonap. Comp. List, 1838, 62. — Lawr. in Baird's B. N. Am. 1858, 854. — Baird, Cat. N. Am. B. 1859, no. 672. — Saunders, P. Z. S. 1878, 163 (synonymy, etc.). — Ridgw. Nom. N. Am. B. 1881, no. 658. — Coues, 2d Check List, 1882, no. 782.
Larus (*Rissa*) *tridactyla*, Coues, B. N. W. 1874, 644.
Larus rissa, Brünn. Orn. Bor. 1764, 42. — Linn. S. N. ed. 12, I. 1766, 224.
Larus albus, Müller, Natursyst. 1776, 108 (based on Buffon's *Mouette cendrée tachetée*).
Larus cinerarius, Fabr. Fauna Grœnl. 1780, 101 (not of Linn. 1766. — Winter plumage).
Larus nævius, Schäff. Mus. Orn. 1789, 64 (not of Linn.).
Larus torquatus, Pall. Zoog. Rosso-As. II. 1826, 328.
Larus canus, Pall. t. c. 330 (not of Linn.).
Larus gavia, Pall. t. c. 329.
Larus riga, Gmel. S. N. I. ii. 1788, 594 (misprint).
Rissa Brunnichii, Leach, Stephen's Gen. Zool. XIII. i. 1826, 181, pl. 21.
Rissa cinerea, Eyton, Cat. Br. B. 1836, 52.
Laroides minor, Brehm, Vög. Deutschl. 1831, 756.
Rissa borealis, Brehm, Naum. 1855, 294 (not *Larus borealis*, Bruch).
Rissa gregaria, Brehm, l. c.

b. Pollicaris.

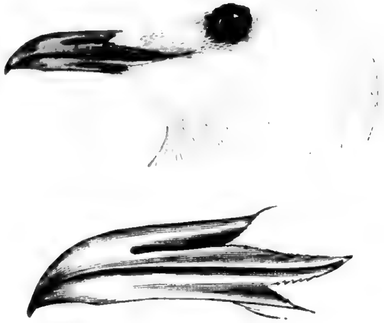
Larus rissa, Pall. Zoog. Rosso-As. II. 1826, 321 (not of Brünn.).
Larus tridactylus, Kittl. Isis, 1832, 1104 (not of Linn.).
Larus (*Rissa*) *brachyrhynchus*, Bruch, J. f. O. 1853, 103, sp. 81 (nec Richardson, 1831, nec Gould, 1843).
Rissa nivea, Bp. Naum. 1854, 212 (*nomen nudum;* not of Gray, 1845).
Rissa Kotzebui, Bonap. Consp. II. 1856, 226 (not of 1854!. — Elliot, Illustr. B. Am. pl. 54.
Larus tridactylus, var. *Kotzebui*, Coues, Key, 1872, 314; Check List, 1873, no. 552 *a*; B. N. W. 1874, 646; Elliott's Alaska, 1875, 199.
Rissa tridactyla Kotzbuei, Ridgw. Nom. N. Am. B. 1881, no. 658 *a*.
Rissa tridactyla Kotzebuii, Coues, 2d Check List, 1882, no. 783.
Rissa tridactyla pollicaris, Stejn. MS.



R. tridactyla.

Hab. Circumpolar Regions in summer, coming south in winter to the Middle States and Great Lakes; no Pacific coast record south of Alaska.

Sp. Char. *Adult, in summer:* Mantle deep pearl-gray (about the same shade as in *Larus brachyrhynchus* and *L. californicus*), the secondaries passing into white terminally. Primaries paler pearl-blue, the five outer quills with their terminal portion black, this color extending for about 3.25 inches on the outer and .75 of an inch, more or less, on the fifth, and of intermediate extent on those between; outer web of the exterior quill almost wholly black; inner quills pale pearl-blue, scarcely paler terminally, the sixth sometimes marked with a black spot near the end of the outer web; fifth quill tipped with white, and fourth with a minute apical spot (when not worn off). Rest of the plumage snow-white. Bill pale yellow, sometimes tinged with greenish; inside of mouth vermilion-red; eyelids red; iris brown; legs and feet black or dusky brown. *Adult, in winter:* Similar, but nape and occiput washed with the color of the back, the auricular region, and immediately in front of the eye, with a dark plumbeous suffusion, sometimes extending across the occiput. *Young, first plumage:* Somewhat similar to the winter adult, but lower part of nape covered by a large transverse patch of black, the anterior lesser wing-coverts also more or less black, as are the centres of the inner longer coverts and tertials; primary coverts and outer webs of four or five outer primaries also black. Tail crossed at the end (except lateral pair of feathers) by a broad black band, widest on the intermediæ. Bill wholly black; "edge of eyelids and iris as in the adult" (Audubon); legs and feet dusky brownish. *Downy young:* Head, neck, wings, and lower parts, immaculate white, the nape and base of the wings more or less tinged with buff; back, rump, and flanks, yellowish gray, the down darker at the base.



Wing, about 12.25 inches; culmen, 1.40–1.50; depth of bill at base, .59, through angle, .40; tarsus, 1.30; middle toe (with claw), 1.80.

The Common Kittiwake is a northern species, found both in Europe and America, in the waters of the Atlantic, and represented on the Pacific by an allied form so essentially similar to it that the two cannot be specifically distinguished from each other. It is more or less abundant in the northern portions of Asia and Europe, and occurs on both the eastern and western shores of North America in northern latitudes. During the winter it wanders south in an irregular manner.

Mr. Godman met with a few individuals about the harbor of Punta Delgada, in the Azores, on his arrival there, and was informed by the master of one of the fruit schooners that these birds frequently followed his vessel through the whole of the voyage from England. Mr. Godman was led to believe that this species breeds about the coast of Teneriffe. He is confident that he saw either this bird or *L. canus* at Teneriffe in the middle of May, but he was not able to secure any specimens. Mr. Saunders found the Kittiwake abundant on the outside of the Straits of Gibraltar in the winter, but it was more rare to the eastward.

The Kittiwake is given by Middendorff as a bird of Siberia, where it extends its movements to the farthest north. Mr. Gillett mentions his having found it common along the entire coast of Nova Zembla. Von Heuglin found it one of the most common species on the west coast of Nova Zembla. It was not seen in Matthews' Strait, nor on Waigatsch Island.

Professor Alfred Newton found it a very common bird in Spitzbergen, where it frequented the whole coast. In Parry's Expedition it was observed feeding on *Merlangus polaris* and *Alpheus polaris* as far to the north as was reached; namely, lat. 82° 45′ N. Dr. Malmgren saw it occupying a middle station on the cliffs where the Gulls were breeding, and found its stomach filled with the *Limacina arctica* and the *Clio borealis.* In his last voyage he noticed it breeding on Beacon Island.

Mr. Wheelwright states that this Gull is only an occasional visitant of the Scandinavian coasts, and appears to be limited exclusively to the Polar seas.

According to Yarrell, the Kittiwake is far from being a rare bird on the coast of England, and is decidedly a rock-breeder; and very common in the breeding-season on all the rocky parts of the coasts of Hampshire, Dorsetshire, Devonshire, and Cornwall. It is only a summer visitor to Ireland; but is found in considerable numbers on the coast of England in winter, and is also resident on the coast of France. It is said to breed on many of the high ranges of cliffs along the southern shore of England, and also on the high rocky promontories on the eastern coast, such as Flamborough Head, Scarborough, the Farne Islands, St. Abb's Head, the Bass Rock, Aberdeen, and the Orkney and Shetland Islands. Mr. Proctor found it very plentiful in Iceland. In the winter it is said to wander to Genoa, Madeira, Tripoli, and the Caspian Sea.

This bird is given by Professor Reinhardt as one of the most common and abundant of the resident species of Greenland. According to the observations of Sir James Ross, it inhabits nearly all parts of the Arctic Regions, having been met with in the highest latitudes then attained by man. It is extremely numerous during the summer season along the west coast of Prince Regent's Inlet, where, in several places peculiarly well fitted for breeding stations, it congregates in inconceivable numbers. The party under the command of Ross killed enough to supply themselves with several meals, and found it excellent eating, and the flesh free from any unpleasant flavor. Except in the fall, winter, and early spring, this species is not found south of the St. Lawrence; but it is numerous after September and until April in the Bay of Fundy, and along the New England coast; it even extends its visits to Long Island and New Jersey, but is not common there.

According to information obtained by Sir John Richardson, the Kittiwake abounds in the interior of the Fur Countries, on the coasts of the Pacific, and also on the shores of the Arctic Seas, where it breeds. The young appear in considerable numbers in the autumn on the muddy shores of Hudson's Bay, after which they retire to the southward. The food of this species consists chiefly of small fish and marine and fresh-water insects. This bird is mentioned by Dr. Bessels among those secured in Captain Hall's expedition in the "Polaris." Mr. H. W. Feilden also states that he saw a few Kittiwakes flying over the open water in the vicinity of Port Foulke, July 28, 1875, but did not observe any to the northward after entering the ice of Smith's Sound; and in 1876, as the Expedition returned south, none of these birds were seen until the north water of Baffin's Bay was reached.

The Kittiwake was met with constantly by Mr. Kumlien from the Straits of Belle Isle northward; and from September until the ice covered the water it was seen in very great numbers. Where the tide ran strongly, these birds followed the stream for many miles in regular order, half the number constantly dipping into the water, the rest flying on a few feet farther.

The Kittiwake is occasionally taken at Bermuda in the winter. Mr. Hurdis states that its presence there is usually in consequence of the violent westerly gales prevailing at that season.

Audubon found it breeding on the Gannet Rocks of the St. Lawrence, where it continues to do so in large numbers; and this is probably its most southern breeding-place on the Atlantic. Dr. Bryant did not meet with any on the coasts of Maine, New Brunswick, or Nova Scotia.

In England the young and the old Kittiwakes are popularly regarded as being two distinct species. The former is known as the "Tarrock," and the latter as the "Kittiwake," from the cry of this Gull when disturbed at its breeding-stations, as its three notes, uttered in quick succession, resemble this word. Yarrell quotes an interesting account of a young Kittiwake which had been reared from its nest, and which became quite domesticated, and so strongly attached to its benefactors that although left at full liberty, it would mate during the summer, inhabiting the cliffs on the coast of the Isle of Wight, and in the winter returning to live with its friends. It was so familiar with those persons it knew, that it would enter their cottages and eat from their hands; but would not permit the approach of a stranger.

The nests of this species — found on Gannet Rock, in the St. Lawrence — are described by Audubon as placed on narrow ledges, and composed of eel-grass and other coarse grasses from the upper portions of the island. The surfaces of the nests were quite flat, although some were several inches in thickness, and appeared to have been added to from year to year. The sitting birds remained persistently on their eggs, seldom flying off, but merely moving to one side. The male birds were exceedingly clamorous, flew around the party in great concern, and showed much courage. The eggs are described as being of a light olive-green color, marked with numerous irregular spots of dark brown. Their average length was 2.25 inches, and their breadth 1.87.

The form found on the Pacific shores, and known to some writers as the *Rissa Kotzebui*, differs so little from the common *R. tridactyla* that it can only be regarded as a very proximate variety. Its habits and general peculiarities are not in any wise different, but it appears to be confined exclusively to the waters of the North Pacific, where it is chiefly found in the Aleutian Islands and on the northeastern coast of Asia. Mr. Dall states that this variety was found by him frequenting the regions about the peninsula of Aliaska at all seasons, but was seldom known to come into the harbor except during storms. A pair came into Ilinliak Harbor, in Unalashka, whenever in the course of the winter a severe gale was blowing on the outside, but were not seen under any different circumstances. They were considered by Mr. Dall as presenting well-marked differences in their appearance from the Common Kittiwake, as well as from the *R. brevirostris*, which is so very common in the Prybilof Islands.

According to the observations of Mr. Elliott, these birds breed in the Prybilof Group, by tens of thousands, in company with the *brevirostris*, coming at the same time, but laying a week or ten days earlier. In all other respects the two correspond in habits, and are present in just about the same numbers.

Two examples of this species were obtained at Sitka by Bischoff. The young were shot at Amak Island, north of Aliaska, by Captain Smith. This bird is abundant at Sitka, and also at Plover Bay, Siberia.

Mr. Dall, in his Notes on the Aleutian Islands, mentions his obtaining its nests, eggs, and young about July 11, 1872, at Round Island, Coal Harbor, Unga Island, Shumagins. It was also common at Delaroff Harbor, Unga, and was seen at Kadiak. On entering Coal Harbor he was struck with a peculiar white line which wound round the precipitous cliffs of Round Island, that was found to be caused by the presence of these birds. The nests in their position were unlike anything he had ever seen before. They appeared as if fastened to the perpendicular face of the rock; but a close examination showed that two parallel strata of sandstone projected irregularly from the face of the cliff for a distance of from one to four inches, and that the nests were built where these broken ledges afforded a partial support, although the shelf thus originated was seldom more than half as wide as the nest. The line of nests followed the winding projections of these ledges, the material used being dry grasses agglutinated together, and also secured in the same way to the rock. Each nest had a very shallow depression at the top, in which were two eggs. The whole had an intolerable odor, and the nests were very filthy. The birds hardly moved at the approach of an intruder; only those within a distance of a few yards left their posts. Mr. Dall took away a nest containing two young ones, and the parent bird, coming back soon after, was astonished at their mysterious disappearance, and evidently suspecting foul play on the part of her nearest neighbor, began a furious assault upon the latter. A few eggs were obtained in a moderately fresh condition, but most of those seen were far advanced toward hatching.

Mr. Dall adds that the Kittiwake manifests great curiosity, sending out scouts whenever any unusual object approaches. If not molested, these scouts soon return to the flock, and the whole then proceed to investigate the phenomenon. This bird is described as having a shrill, harsh cry as well as a low whistle, the former being the one generally uttered when it is alarmed, and the latter being addressed to their young, or used in communication with each other. After the young are fully fledged the parent birds leave the harbors, and are found during winter off shore, except in heavy storms.

At Delaroff Harbor Mr. Dall found the nests attached to the sides of the bare rocks and pinnacles of scoriaceous lava near the entrance. The slight ledges and projections being so small as to be invisible at a short distance, the nests appeared to be fastened, like those of the Swallow, to the perpendicular faces of the rocks; and the appearance they presented was very remarkable.

In building its nest — as Mr. Elliott states — this species uses more grass and less mud than the *brevirostris,* and its eggs are more pointed at the small end than those of the last-named bird, the ground-color being also lighter, with numerous spots and blotches of dark brown. The chicks cannot with certainty be distinguished from those of the *brevirostris* until two or three weeks have elapsed after they have been hatched.

The eggs of the Pacific variety — collected from Round Island, Alaska, by Mr. Dall, and from the Prybilof Islands by Mr. Elliott — vary in length from 2.20 to 2.35 inches, and in breadth from 1.60 to 1.65. The ground-color of some is a pale brownish gray, that of others is a pale greenish gray. The markings are more or less scattered, are rather faint, slightly longitudinal and zigzag in their shape, of lilac-gray, mingled with other markings of a dilute umber. The eggs are somewhat uniform in their appearance, and do not exactly correspond with any of the common *R. tridactyla* which I have ever met with. But this variation, although thus constant, is not greater than that which has been found to occur in other instances in eggs of the same species taken at different localities which were at some distance from each other.

Rissa brevirostris.

THE RED-LEGGED KITTIWAKE.

Rissa nivea, Gray, Gen. B. III. 1845 (not of Pallas, 1826). — Lawr. in Baird's B. N. Am. 1858 855. — Elliot, Illustr. Am. B. pl. 54.

Larus brachyrhynchus, Gould, P. Z. S. 1843, 106; Zool. Voy. Sulph. 50, pl. 34 (not of Richardson, 1831).

Larus (*Rissa*) *brevirostris*, "Brandt," Bruch, J. f. O. 1853, 285. — Coues, B. N. W. 1874, 647.

Rissa brevirostris, Lawr. in Baird's B. N. Am. 1858, 855. — Baird, Cat. N. Am. B. 1859, no. 674. — Ridgw. Nom. N. Am. B. 1881, no. 659. — Coues, 2d Check List, 1882, no. 784.

Larus brevirostris, Coues, Key, 1872, 315; Check List, 1873, no. 553; in Elliott's Alaska, 1875, 199.

Larus Warneckii, Coinde, Rev. et Mag. Zool. 1860, 401.

Hab. Coasts and islands of the North Pacific, south to the Prybilof Group and Aleutians.

Sp. Char. Feet deep coral-red or vermilion in the adult. *Adult, in summer:* Mantle deep bluish plumbeous (decidedly darker than in *R. tridactyla*, nearly the same shade as in *Larus atricilla*), the secondaries broadly and somewhat abruptly tipped with white. Primaries not lighter than the back, the exterior quill with the outer web black, the next nearly (sometimes quite) so, the next three with a large subterminal space of black extending from about 2.50 inches on the third to about .75 of an inch (more or less) on the fifth, these three quills tipped with plumbeous; remaining quills bluish plumbeous, the inner webs broadly edged and the outer tipped with white; sixth quill usually with a black spot near the end of the outer web. Remainder of the plumage snow-white. Bill yellow, sometimes tinged with greenish; rictus and inside of mouth orange-red; naked eyelids vermilion; iris dark brown (Stejneger, MS.). *Adult, in winter:* Similar, but nape tinged transversely with pale pearl-blue, the auriculars crossed by a bar of plumbeous. *Young, first plumage:* Similar to the adult, but nape crossed by a band of blackish plumbeous, another across the auriculars, and a suffusion of the same in front of the eyes. Primary coverts and outer webs of three or four exterior primaries black, but no other black or dusky on wings or on tail. Bill black or dusky; feet brownish. *Downy young:* Not distinguishable from that of *R. tridactyla*.

Wing, about 13.00 inches; culmen, 1.20; depth of bill through base, .50; through angle, .42; tarsus, 1.25; middle toe (with claw) nearly 2.00.

Our knowledge of the habits and geographical distribution of this species is somewhat limited, though considerably increased by the investigations of Mr. H. W. Elliott in the Prybilof Islands, where it is abundant. Its peculiar habits do not appear to be essentially different from those of the common Kittiwake. It is probably more or less common both to these islands and to the sea-coast of both shores of the North Pacific Ocean and of the Behring Sea.

Mr. Dall, in his Notes on the Birds of the Aleutian Islands, speaks of it as very common in the Prybilof Islands; and in his paper on the Birds of Alaska mentions it as occurring by thousands over a small lake on St. George's Island, where it was very conspicuous from its coral-red legs and feet — this rendering clear to him that it must be the true form originally described by Brandt. The specimens in the collection of the Smithsonian Institution, which while differing from this in no other respect were found to have yellowish legs, and were at first an occasion of doubt, prove to be identical with this, the yellow color having been found to be the result of drying. Mr. Dall rightly conjectured that this is the same species as that since described by Gould as *Larus brachyrhynchus*, from Kamtschatka. Examples of the present species were obtained by Captain Smith, Aug. 15, 1868.

Mr. Henry W. Elliott makes the following remarks in regard to this species as observed by him in the Prybilof Islands: —

"This beautiful Gull, one of the most elegant of birds while on the wing, seems to favor these islands with its presence to the exclusion of other lands, coming by tens of thousands to breed. It is especially abundant on St. George's Island. It is certainly by far the most attractive of all the Gulls, its short, symmetrical bill, large hazel eye, with crimson lids, and bright red feet, contrasting richly with the snowy-white plumage of the head, neck, and under parts. Like the *Larus glaucus*, it remains about the islands the whole season, coming on the cliffs for the purpose of nest-building, breeding by the 9th of May, and deserting the bluffs when the young are fully fledged and ready for flight, early in October.

"It is much more cautious and prudent than the 'Arrie,' for its nests are placed on almost inaccessible shelves and points, so that seldom can a nest be reached unless a person is lowered down to it by a rope passed over the cliff. Nest-building is commenced by this bird early in May, and not usually completed much before the 1st of July. It uses dry grass and moss, cemented with mud, which it gathers at the margins of the small fresh-water sloughs and ponds scattered over the islands. The nest is solidly and neatly put up, the parent birds working in the most diligent and amiable manner.

"Two eggs are the usual number, although occasionally three will be found in the nest. If these eggs are removed, the female will renew them in the course of another week or ten days. The eggs are of the size and shape of those of the common Hen, colored with a dark gray ground, spotted and blotched with sepia-brown patches and dots. Once in a while an egg will have on its smaller end a large number of suffused blood-red spots.

"Both parents assist in the labor of incubation, which lasts from twenty-four to twenty-six days. The chick comes out with a pure white downy coat, and pale whitish-gray bill and feet, resting helpless in the nest while its feathers grow. During this period it is a comical-looking object. At this age the natives capture them and pet them, leaving a number every year scattered through the village, where they become very tame; and it is not until fall, when cold weather sets in, and makes them restless, that they leave their captors and fly away to sea."

Mr. Elliott further states that this bird is very constant in its specific characters. Among thousands of them he has never observed any variation in the coloration of the bills, feet, or plumage of the mature bird, with one exception. There is a variety, seldom seen, in which the feet are nearly yellow, or more yellow than red, and the edge of the eyelid is black instead of scarlet; there is also a dark patch back of each eye. The color of the feet may be only an accidental individual peculiarity; the dark eye-patch and absence of bright color from the eyelids may depend upon the season.

Eggs of this species (Smithsonian Institution, No. 16326) collected by Mr. Elliott from St. Paul's Island, in the Behring Sea, have an average length of 2.20 inches, and a breadth of 1.55. Their ground-color is a dull brownish white, varying to a light drab, with intermediate shades of grayish buff, marked with blotches of a sepia-brown color and of raw umber; these are underlain by two shades of cloudings of a lilac-gray. Three eggs in my own collection measure 2.10 inches by 1.62; 2.22 by 1.68; 2.25 by 1.66. The ground-color of two is tinged with greenish, and that of the other with a reddish hue.

Genus **LARUS**, Linnæus.

Larus, Linn. S. N. ed. 10, I. 1758, 136; ed. 12, I. 1766, 224 (no particular type indicated).
Leucus, Kaup, Nat. Syst. Eur. Thierw. 1829, 86 ("includes *L. marinus, glaucus*, and *fuscus*").
Laroides, Brehm, Vög. Deutschl. 1831, 738 ("includes most of the European hoodless Gulls").
Gavina, Bonap. Naum. 1854, 212 ("For *L. canus* and allies and for *L. adouini*." — Saunders).
Chroicocephalus, Eyton, Brit. B. 1836, 53 (type, *Larus capistratus*, Temm. ?).
Atricilla, Bonap. Naum. 1854, 212 (type, *A. Catesbæi*, Bp. = *Larus atricilla*, Linn.).
Dominicanus, Bruch, t. c. 100 (type, *Larus marinus*, Linn.).
Glaucus, Bruch, J. f. O. 1853, 101 (type, *Larus glaucus*, Linn.).
Blasipus, "Bp." Bruch, J. f. O. 1853, 108 (type, *Larus modestus*, Tschudi).
Melagavia, Bonap. Naum. 1854, 213 (type, *Larus Franklini*, Sw. & Rich.).

Char. Size exceedingly variable, ranging from that of the smaller Albatrosses down to that of the medium-sized Terns; tail even; tarsus always longer than the middle toe with its claw (except in *L. minutus*), and smoothish behind; colors extremely variable, but young always widely different from the adult.

The genus *Larus*, in the comprehensive sense in which we have here, for reasons stated on p. 196, adopted it, includes many very dissimilar forms, which probably represent distinct genera. The North American species may be defined as follows: —

A. *Adult with the entire head, neck, lower parts, and tail pure white.* (**Larus**, Linn.)

a. Mantle very pale pearl-blue; primaries the same, fading into white toward the ends.

1. **L. glaucus.** Wing, 16.75–18.60 inches; culmen, 2.15–2.65; depth of bill through the angle, .75–1.00; tarsus, 2.30–3.00; middle toe, 1.95–2.50. Eyelids in summer adult, reddish purple; feet flesh-color. *Hab.* Circumpolar Regions, south, in winter, to Long Island, the Great Lakes, and North Pacific.

2. **L. leucopterus.** Wing, 15.40–16.50 inches; culmen, 1.65–1.90; depth of bill through angle, .60–.70; tarsus, 2.05–2.20; middle toe, 1.70–1.95. Eyelids in summer adult, flesh-color; feet inclining to orange-red. *Hab.* Same as *L. glaucus.*

b. Mantle pale pearl-blue; primaries similar, but abruptly tipped with white.

3. **L. Kumlieni.** Five outer primaries marked with slate-gray spaces immediately before the white tips; color of the mantle as in *L. leucopterus*, and size about the same. Eyelids in summer adult reddish purple, or purplish flesh-color; feet flesh-color. Wing, 15.00–17.00 inches; culmen, 1.60–1.90; depth of bill through angle, .55–.66; tarsus, 2.10–2.40. *Hab.* North Atlantic coast, breeding in Cumberland Sound, and migrating south in winter to Nova Scotia, New Brunswick, and New York.

4. **L. Nelsoni.** Similar in plumage to *L. Kumlieni*, but much larger. Wing, 18 25 inches; culmen, 2.35; depth of bill through angle, .80; tarsus, 3.05; middle toe, 2.40. *Hab.* Norton Sound, Alaska.

5. **L. glaucescens.** Five outer primaries without slate-gray spaces before the white tips. Wing, 16.25–17.30 inches; culmen, 2.20–2.60; depth of bill, .80–.90; tarsus, 2.35–2.90; middle toe, 2.05–2.45. *Hab.* North Pacific coast of North America, south to Washington Territory; Cumberland Gulf.

c. Mantle dark slate, dark plumbeous, or blackish; primaries similar, marked at and near the ends with white.

6. **L. marinus.** Mantle dark slate, or blackish slate, without blue shade. Wing, 17.60–19.50 inches; culmen, 2.40–2.60; depth of bill through angle, .98–1.05; tarsus, 2.70–3.10; middle toe, 2.10–2.50. *Hab.* Coasts of the North Atlantic; in America, south to Long Island and Great Lakes.

7. **L. schistisagus.** Mantle deep dark plumbeous, or dark bluish slate. Eyelids in summer adults, reddish violet-gray; iris light yellow; feet pinkish flesh-color. Wing, 18.10 inches; culmen, 2.35; depth of bill through angle, .90; tarsus, 2.75; middle toe, 2.40. *Hab.* North Pacific, chiefly on the Asiatic side, but also occasionally along the coast of Alaska (Port Clarence; Bean).

d. Mantle some shade of bluish gray; primaries marked with black and white at and near the ends.

8. **L. occidentalis.** Mantle deep plumbeous. Wing, 15.25–17.00 inches; culmen, 2.00–2.35; depth of bill at angle, .85–.95; tarsus, 2.45–2.65; middle toe, 2.00–2.45. Bill deep yellow, the mandible with a red subterminal spot; eyelids red; iris brown; legs and feet pale flesh-color.[1] *Hab.* Pacific coast of North America.

9. **L. affinis.** Mantle deep plumbeous. Wing, 16.60–17.20 inches; culmen, 1.92–2.10; depth of bill through angle, .76; tarsus, 2.24–2.50; middle toe with claw, 2.24. Bill yellow, with a red spot near the end of the mandible and a red tinge to the maxilla in front of the nostril; iris yellow; eyelids orange-red or vermilion; legs and feet yellow.[2] *Hab.* Northern part of Palæarctic Region; Greenland.

10. **L. argentatus.** Wing, 15.75–17.50 inches; culmen, 1.95–2.50; depth of bill through angle, .70–.85; tarsus, 2.30-2.80; middle toe, 1.85–2.25. Mantle pale pearl-blue. Bill deep yellow, the mandible with red subterminal spot; eyelids yellowish; iris silvery white or pale yellow; legs and feet flesh-color. *Hab.* North America in general, but rare on the Pacific coast; Europe.

11. **L. cachinnans.** Mantle deep cinereous-blue. Wing, 15.15–18.30 inches; culmen, 1.90–2.20; depth of bill through angle, .60–.80; tarsus, 2.15–2.50; middle toe, 1.60–2.15. Bill deep yellow, the mandible with a red subterminal spot; eyelids orange-red; iris pale yellow; legs and feet bright yellow. *Hab.* Northern Asia and North Pacific coast of North America, south, in winter, to California.

12. **L. californicus.** Mantle deep cinereous-blue (precisely as in *L. cachinnans*). Wing, 15.00–16 75 inches; culmen, 1.65–2.15; depth of bill through angle, .60–.75; tarsus, 2.00–2.60; middle toe, 1.70–1.95. Bill deep yellow, the mandible with a red subterminal spot enclosing a dusky one, with a corresponding dusky spot near end of the maxilla; eyelids vermilion-red; iris deep brown; legs and feet pale grayish pea-green. *Hab.* Western North America, from Western Mexico to Alaska (interior waters chiefly).

13. **L. delawarensis.** Mantle pale pearl-blue (much as in *L. argentatus*). Wing, 13.60–15.75 inches; culmen, 1.55–1.75; depth of bill through angle, .50–.65; tarsus, 1.90–2.45; middle toe, 1.30–1.60. Bill greenish yellow, crossed near the end by a blackish band, the tip sometimes tinged with orange; eyelids vermilion-red; iris clear pale yellow; legs and feet pale yellow, sometimes tinged with greenish. *Hab.* North America in general.

14. **L. brachyrhynchus.** Mantle pale ashy blue (intermediate in shade between *L. argentatus* and *L. californicus*). Wing, 13.20–14.50 inches; culmen, 1.25–1.70; depth of bill through angle, .40–.50; tarsus, 1.70–2.10; middle toe, 1.30–1.55. Bill yellowish green, somewhat glaucous, the tip and cutting edges yellow; eyelids orange-yellow; iris brown; legs and feet bluish green, the webs yellowish. *Hab.* Interior of Arctic America; Pacific coast, south to Washington Territory.

15. **L. canus.** Mantle pale ashy blue (as in *L. brachyrhynchus*). Wing, 13.90–14.50 inches; culmen, 1.35–1.60; depth of bill through angle, .45–.50; tarsus, 1.90–2.25; middle toe, 1.35–1.45. Bill greenish olivaceous (in the dried skin), the terminal third yellow; eyelids vermilion-red; iris grayish brown; legs and feet yellowish green. *Hab.* Palæarctic region; casual in Labrador.

B. *Adult with the lower parts plumbeous or dusky, like the upper; tail wholly or chiefly black or dusky; bill red.* (**Blasipus**, BONAP.)

16. **L. Heermanni.** *Adult:* Ash-gray below, and plumbeous-slate above; head white in summer, dusky in winter. Secondaries broadly tipped with white; tail dusky black, tipped with white; bill red, usually tipped with black; eyelids red; legs and feet black. *Young:* Sooty grayish brown, the feathers of the upper parts bordered with grayish

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[1] An adult obtained by Mr. L. Belding at La Paz, Lower California, in February, appears to have had bright yellow legs and feet!

[2] We are unfortunately not able to give a satisfactory diagnosis of this form, which is admitted by good authorities to be a quite distinct species.

white; bill brownish, black terminally. Wing, about 13.15 inches. *Hab.* Pacific coast, from British Columbia to Panama.

C. *Adult with the head and upper part of the neck black in summer, forming a well-defined "hood;" plumage of the lower parts rose-tinted; size medium to very small; the bill slender.* (**Chroicocephalus,** EYTON.)

a. Tarsus longer than the middle toe and claw.

17. **L. atricilla.** Bill and feet dark brownish red, the former sometimes tipped with brighter red; eyelids dull red; iris dark brown; hood dark sooty-slate; mantle deep plumbeous-slate. Wing, about 13.00 inches. *Hab.* Atlantic coast of America, south to the Lower Amazon, north, casually, to Maine; Pacific coast of Central America; casual in Europe.

b. Tarsus shorter than the middle toe and claw.

18. **L. Franklini.** Bill and feet carmine-red; iris dark brown; hood plumbeous-black; mantle deep bluish-plumbeous. Wing, about 11.25 inches. *Hab.* Interior of North America, migrating south over the most of Central and South America, and breeding chiefly north of the United States.

19. **L. philadelphiæ.** Bill uniform deep black; legs and feet fine orange-red in summer, flesh-color in winter; iris dark brown; hood dark plumbeous; mantle delicate pearl-blue. Wing, about 10.25 inches. *Hab.* North America in general, but not south of the United States, except in Bermudas; breeding far northward.

[**L. minutus.** Bill reddish dusky; legs and feet vermilion- or coral-red; hood deep black; mantle delicate pearl-gray; primaries without any black markings. Wing, about 8.75–9.00 inches. *Hab.* Palæarctic Region.[1]]

Larus glaucus.

THE GLAUCOUS GULL.

Larus glaucus, BRÜNN. Orn. Bor. 1764, 44. — FABR. Faun. Grœnl. 1780, 100. — GMEL. S. N. I. ii. 1788, 600. — NUTT. Man. II. 1834, 306. — AUD. Orn. Biog. V. 1839, 59, pl. 396; Synop. 1839, 329; B. Am. VII. 1844, 170, pl. 449. — LAWR. in Baird's B. N. Am. 1858, 842. — BAIRD, Cat. N. Am. B. 1859, no. 656. — COUES, Key, 1872, 311; Check List, 1873, no. 543; 2d ed. 1882, no. 768; B. N. W. 1874, 620. — SAUNDERS, P. Z. S. 1878, 165. — RIDGW. Nom. N. Am. B. 1881, no. 660.

Larus hyperboreus, GUNN. in Leem's Lapp. Beskr. 1767, 283. — STEJN. Proc. U. S. Nat. Mus. V. 1882, 39.

Larus glacialis, "BENICKE," MACGILL. Mem. Wern. Soc. V. pt. i. 1824, 270.

Larus giganteus, "TEMM.' BENICKE, Ann. Wetterau. Gesellsch. III. 1814, 140.

"*Larus consul*, BOIE, Wiedemann's Zool. Mag. I. 126" (SAUNDERS).

Larus leucerctes, SCHLEEP, N. Ann. Wetterau. Gesellsch. I. 1819, 314.

Larus islandicus, EDMONST. Mem. Wern. Soc. IV. 1822, 185 (nec EDMONST. op. cit. p. 506 = *L. leucopterus*).

Larus Hutchinsii, RICH. F. B. A. II. 1831, 419 (note). — COUES, Pr. Acad. Nat. Sci. 1862, 294. — ELLIOT, Illustr. Am. B. II. pl. 53.

HAB. Circumpolar Regions, south in winter to Long Island, the Great Lakes, and North Pacific.

SP. CHAR. *Adult, in summer:* Mantle very pale pearl-blue; primaries still paler pearl-blue, or bluish white, fading gradually into white at ends, their shafts yellowish white or pale straw-color. "Iris golden yellow; eyelids orange-yellow; bill lemon-yellow, greenish toward tip, crimson spot on lower mandible; tarsi and toes flesh-color" (L. KUMLIEN, MS.[2]). *Adult,*

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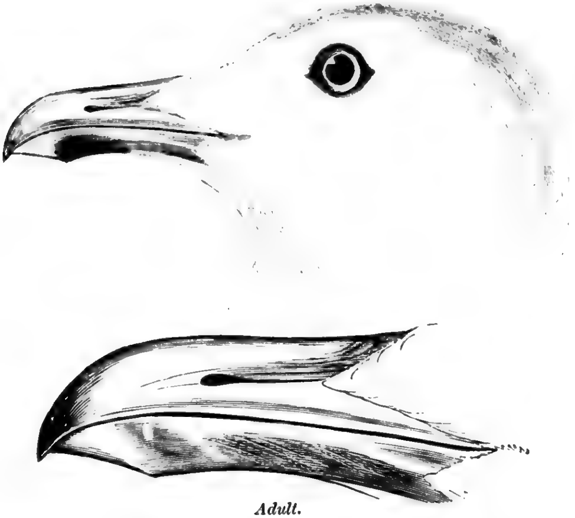
[1] The characters of this species are given on account of its possible occurrence in North America.

[2] According to Audubon, the adult male has the bill, etc., colored as follows: "Bill gamboge-yellow, with a carmine patch toward the end of the lower mandible, and the edges of both mandibles at the base of the same color. Edges of eyelids red, iris yellow. Feet flesh-colored, claws yellowish." The young are described as having the bill yellow to beyond the nostrils, the end black; the feet flesh-colored, with dusky claws; and the iris brown.

in winter: Similar to the summer plumage, but head and neck streaked with pale brownish gray. "The bill is wine-yellow, the lower mandible with an orpiment patch near the end; the edges of the eyelids pale yellow; the feet flesh-colored, the claws bluish black" (MACGILLIVRAY). *Young, first plumage:* Ashy white, more or less tinged with pale brownish ash below, the upper parts more or less mottled transversely with the same; head and neck faintly streaked with the same. Terminal third of bill dusky, basal portion flesh-color; legs and feet flesh-color; "iris yellowish brown" (KUMLIEN, MS.).[1] *Young, in second winter:* Wholly pure *white,* the bill and feet colored as above. *Downy young* (No. 76217, Kingwah Fiord, Cumberland Gulf, June 24, 1878; L. KUMLIEN): Grayish white, paler below; head and neck irregularly marked with scattered large spots of dusky; back, wings, and rump irregularly clouded with dark grayish. Bill brownish, crossed by a broad dusky band; feet light brown.



Adult.

Total length, 28.50 to 32.00 inches; extent, 57.00 to 65.00; wing, 16.75–18.60 (17.93); culmen, 2.15–2.65 (2.44); depth of bill through angle, .75–1.00 (.85); tarsus, 2.30–3.00 (2.70); middle toe, 1.95–2.50 (2.26). [Fourteen specimens.]

There is a very great amount of individual variation in this species, some specimens being hardly distinguishable from *L. leucopterus,* while others are larger than the average of *L. marinus.* We have found it exceedingly difficult, with a series of eighteen examples of both species before us, to define the limit between *glaucus* and *leucopterus,* the coloration being quite the same in the adult stage, and the individual variation in each so great that they very nearly intergrade, notwithstanding the vast difference in size between the largest specimens of the former and the smallest of the latter. The variation in size seems to be individual and sexual rather than local.

The Burgomaster Gull appears to be confined, during the summer, to the northern shores of the Atlantic and Pacific oceans, and to the connecting portions of the Arctic Sea. It is peculiarly a high northern species, being found in the Arctic Regions of Europe and Asia, and in the more northern portions of North America. In the Pacific it appears to be to a large extent replaced, on the American shore, by the *glaucescens.*

Messrs. Evans and Sturge, in their visit to Spitzbergen, found it breeding in immense numbers. They speak of its nest as being large and untidy, formed of seaweed, and usually containing three eggs. The nests were found on the shore, or, more often, on the low rocks, and in one or two instances were even built on masses of ice. This Gull was observed to act in a very tyrannical manner toward the weaker birds in its vicinity. Its plumage was so very dense that it could only with the greatest difficulty be penetrated by shot. Its eggs were hardly distinguishable from those of *Larus marinus*.

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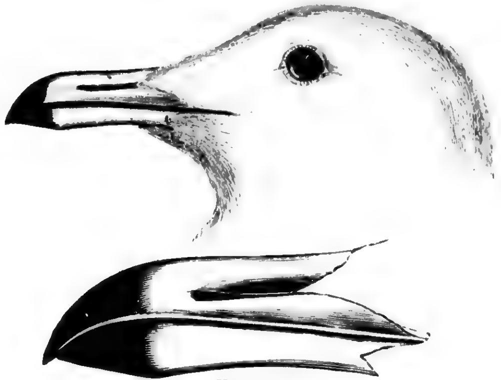
[1] Macgillivray ("Hist. Brit. B." V. 563, 564) describes the fresh colors of the bill, etc., in the young as follows: "*Young:* The bill is horn-color, or pale yellowish gray; the upper mandible brownish black beyond the nostrils; the lower beyond the angle. The feet are flesh-color; the claws lightish brown. *Young, in third winter:* The bill is yellowish flesh-color, with only a dusky spot on each mandible toward the end; iris dull gray; the edges of the eyelids yellow; the feet flesh-color; the claws light grayish black."

Professor Alfred Newton, in his paper on the Ornithology of Spitzbergen, speaks of finding this Gull far less numerous than the Kittiwakes, but probably extending its range along the entire coast of the country.

Sir James Ross refers to this species as being abundant on the shores of Low Island, although it was not seen north of latitude 81°. Professor Newton's friend, who went to the eastward from the Thousand Islands, met with many young Burgomaster Gulls about half-fledged; and he was informed by his pilot that they had been found breeding, in the summer of 1859, on Gilies Land. Dr. Malmgren reported this species as breeding in incredible numbers on Bear Island; he also remarked that it chooses the highest parts of the cliffs for nidification. He likewise found it breeding high up on the mountain sides, apart from any other species. When in Loon Bay he saw one of these Gulls swoop down like a Falcon upon a young *Uria grylle*, seize it in its beak, and devour it on the projecting point of the nearest rocky cliff, where the numerous skeletons bore witness to its rapacity at previous times.



Young.

Middendorff includes this species among the birds of Siberia, and places it in the list of those which penetrate to the most northern portions of that country. Mr. G. Gillett, in his Notes on the Birds of Nova Zembla, mentions finding it abundant everywhere in that region. It was noticed all along the coast, both on the eastern and on the western sides, and did not confine itself to the ice as much as do some of the other species. In this same locality Von Heuglin reports it as pretty common southward as far as Jugors Strait. Mr. R. Swinhoe ("Ibis," April, 1874) reports this species as having been seen at Hakodadi, Japan, in March.

Mr. Wheelwright was informed that the Glaucous Gull breeds occasionally on the coast of East Finland. The eggs are two — seldom three — in number, and are rather smaller than those of the *marinus* — which, however, they closely resemble, although their ground-color is lighter, and the markings are smaller.

In Great Britain this Gull is a winter visitor only; and is a winter resident in the more northern of the Shetland Islands, where it arrives late in the autumn and leaves late in the spring. It is also of occasional occurrence in the winter on the coast of England and of Ireland. A single specimen of this bird was killed in the interior of Scotland, on Loch Lomond.

In Iceland, according to Faber, this species is present through the year — keeping to the open sea in the winter, and breeding, in the summer, on the rocks of the southern and western coast, in company with *Larus marinus* — these two species being much alike in nest, eggs, and habits. This Gull attacks smaller birds, and robs their nests of eggs and young; it feeds also on crabs, shellfish, and the *Cyclopterus lumpus*, or Lump Sucking-fish. It is said to be more numerous than *L. marinus.*

In North America this bird is of rare occurrence in winter on any part of the coast, except about the Bay of Passamaquoddy, where, as well as in the Bay of Fundy, it is not uncommon. It is of occasional occurrence as far west as Long Island; but those seen are nearly all in immature plumage, an adult individual being rarely taken. Mr. Giraud was not aware that a single specimen of this Gull in adult plumage had ever been observed on Long Island; and it is very seldom seen even in its immature dress.

Dr. Walker mentions having met with it on the coast of Greenland, in the vicinity of the port of Frederikshaab, and afterward in Melville Bay, near Cape York. In May, 1859, while he was in Bellot's Bay, Dr. Walker noticed it evidently moving to the northward. He afterward met with it building its nest on the high cliffs which form the sides of Bellot's Strait. This bird is also mentioned by Professor Reinhardt as being one of the residents of Greenland.

Hearne, in his account of his journey to the Arctic Sea, notes the occurrence of what is without doubt this species, which he speaks of as the White Gull. He mentions its visiting Hudson's Bay in great numbers, both on the sea-coast and in the interior; and thinks its range must extend across the continent. It makes its first appearance about Churchill River about the middle of May, builds its nests on the islands in the lakes and rivers, lays two speckled eggs, and hatches its young in June. The eggs are said to be good eating; and the same is true of the flesh of those birds found in the interior, notwithstanding the fact that they feed on fish and carrion. This Gull prolongs its stay on Hudson's Bay as late into the fall as the frost will permit of its procuring a livelihood.

Sir John Richardson states that during the summer this species inhabits Greenland, the Polar Sea, Baffin's Bay, and the adjoining coasts and straits in considerable numbers. It is notoriously greedy and voracious, preying on fish, young birds, and carrion. A specimen killed on Ross's expedition, when struck, disgorged a Little Auk entire, and was found on dissection to have another in its stomach. It is described as being a shy and inactive bird, except when impelled by hunger; and it has none of the clamorousness of other Gulls. Richardson describes its eggs as being of a pale purplish gray, with scattered spots of umber-brown and subdued lavender-purple.

Though of rare occurrence, occasional instances are known of the appearance of this Gull in midwinter on Lake Michigan.

As described by writers who have enjoyed favorable opportunities for studying its peculiarities, the habits of this bird are strongly marked, and differ in many respects from those of most of the genus. Its favorite resorts are the entrances of the more exposed bays, or the open ocean a few miles off the land. There it assiduously attends the fishing-boats for the purpose of picking up any offal which may be thrown overboard. This Gull may without difficulty be taken by a hook and line, fish being used as bait. It is ordinarily shy; but when allured by carrion ceases to be so, and even appears to be indifferent to danger. It will then venture to enter the bays, and even inland waters. When feeding in company with other species, its appearance is peculiar and striking. Its bearing is grave, dignified, and silent, this bird exhibiting none of the liveliness so characteristic of its tribe. When it flies it extends its wings more than most of the genus do, and its flight is more buoyant. When not in quest of food it is shy and retiring, soars out of reach of the fowling-piece, and at intervals is heard to utter a hoarse scream — making a noise unlike that of any other species. This bird has none of the social affections so characteristic of most Gulls and Terns, prompting them to hazard their own lives when their kindred are in trouble; but when once alarmed it instantly flies off. Rev. W. Scoresby, in his account of the Arctic Regions, refers to the Burgomaster as being the chief magistrate of the feathered tribe in the Spitzbergen Region, where none of its class dare dispute its authority. It attends the whale-fishers, hovers over the scene of action; and on its descent, the most dainty pieces must be relinquished, even if already in the grasp of Fulmar Petrel, Ivory Gull, or Kittiwake. This bird seldom alights on the water; and when it rests on the ice it selects a hummock and fixes itself on the highest point. Its eggs were found by Mr. Scoresby on the beach of Spitzbergen, deposited in the same manner as those of a Tern, in depressions in the shingle just above high-water mark, and exposed to the full rays of the sun.

Mr. MacFarlane found the Glaucous Gull breeding on islands in the Arctic Sea. In the sixteen nests in regard to which information is given, the eggs were three in number in three instances, and two in nearly all the others. In no case were more than three found. The nest was generally a mere depression scantily lined with decayed reeds or grasses. In one instance two eggs of this Gull and one egg of the Black Brant were seen in the same nest, which was being incubated by one of this species. The egg of the Goose contained an embryo in a more advanced state than those of the Gull. Both parents were seen, and both were very noisy; making a stout resistance, and trying to drive the intruders off. The female was shot. In another instance both birds were said to be very bold, and several times very nearly struck the man who took the eggs.

Mr. E. Adams mentions this Gull as being among the first to arrive at Norton Sound ("Ibis," 1878); several were seen about the edge of the ice May 2. They bred in the cliffs of some small islands near St. Michael's. The natives value them for their quills — using the back of the shaft for attaching their fishing-lines to the hooks.

Mr. R. Kennicott secured an example of this species, September 17, in the Hudson's Bay Territory. It was seen by Mr. MacFarlane at various localities on the Arctic coast east of Anderson River, in July, 1863; at Liverpool Bay, on islands in Franklin Bay, June and July, 1864; on islands in Liverpool Bay, July, 1874; on islands in the Lower Anderson River; also on the Yukon River by Mr. Dall; and at St. Michael's by Messrs. C. Pease, R. D. Cotter, and H. M. Bannister. It is given by Dr. Bessels as among the birds secured by Captain Hall's party in the Polaris Expedition. The British expedition of 1875 did not find it breeding north of Cape Sabine, but stray individuals were observed as far north as lat. 82° 34′. It was not noticed after Sept. 1, 1875; and did not reappear until the middle of June in lat. 82° 27′ N.

Mr. H. W. Elliott found this species abundant in the Prybilof group, where it appeared to be restricted by its own choice to Walrus Island; although it was seen sailing over and around all the islands in easy graceful flight at every hour of the day; and frequently, late in the fall, would settle down by hundreds upon the carcases on the killing-grounds of the fur-seal. At Walrus Island it is resident throughout the season, and lays its eggs in neat nests built of sea-ferns and dry grass, placed among the grassy tussocks on the centre of the island. Though it is sometimes driven by the ice to the open water fifty to a hundred miles south, it returns immediately after the floe disappears. It lays as early as the first of June, depositing three eggs usually within a week or ten days. These eggs are large, spherically oval, having a dark grayish-brown ground, with irregular patches of darker brownish black. They vary somewhat in size, but the shape and pattern of coloring is quite constant.

The young Burgomaster comes from its shell, after an incubation of three weeks, in a pure-white thick coat of down, which is speedily supplanted by a brownish-black and gray plumage, with which the bird takes flight — having at that time nearly the size of the parent-bird. This dark coat becomes within the next three months nearly white, with the lavender-gray back of the adult. The legs change from a pale grayish tone to the rich yellow of the mature condition; and the bill also passes from a dull-brown color to a bright yellow, with red spots on the lower mandible.

This Gull has a loud shrill cry, which soon becomes very monotonous from its constant repetition. It also utters a low chattering croak while sailing around the islands. It is a very neat bird about its nest, and keeps its plumage in a condition of snowy purity. It is not seen in such large numbers as are several other species. In 1872, when Mr. Elliott visited Walrus Island, he estimated that there were not more than five or six hundred nests.

The egg of this species exhibits the same variations as to the shades of its ground-coloring as does that of the *argentatus* — being of a deep brown clay-color, a pale ash, a light pale clay, or a pearly white. The markings, which are small, and not very numerous, are deep bistre — almost black. The breadth of the egg is usually relatively greater than in other species.

Larus leucopterus.

THE WHITE-WINGED GULL.

Larus argentatus, SABINE, Trans. Linn. Soc. XII. 1818, 546 (not of BRÜNN. 1764).

Larus leucopterus, FABER, Prodr. Isl. Orn. 1822, 91. — SW. & RICH. F. B. A. II. 1831, 418. — NUTT. Man. II. 1834, 305. — AUD. Orn. Biog. III. 1835, 553, pl. 282; Synop. 1839, 327; B. Am. VII. 1844, 159, pl. 447. — LAWR. in Baird's B. N. Am. 1858, 843. — BAIRD, Cat. N. Am. B. 1859, no. 658. — COUES, Key, 1872, 311; Check List, 1873, no. 544; 2d ed. 1882, no. 769; B. N. W. 1874, 622. — RIDGW. Nom. N. Am. B. 1881, no. 661.

Larus arcticus, MACGILL. Mem. Wern. Soc. V. 1824, 268.

Larus glaucoides, "TEMM." MEYER, Taschenb. Vög. Deutschl. IV. 1822, 197. — TEMM. Pl. Col. 77e livr. Introd. Larus, 1828.

Larus islandicus, EDMONST. Mem. Wern. Soc. IV. 1823, 506 (nec *op. cit.* p. 185 = *L. glaucus*).

Larus minor, BREHM, Vög. Deutschl. 1831, 736.

Laroides subleucopterus, BREHM, t. c. 746.

Larus (*Glaucus*) *glacialis*, BRUCH, J. f. O. 1853, 101 (nec MACGILL. 1824).

HAB. Range about the same as that of *L. glaucus*. South in winter to coast of Massachusetts.

SP. CHAR. Similar to *L. glaucus*, but much smaller, the young darker colored. *Adult, in summer:* Mantle pale pearl-blue (a shade darker than in *L. glaucus*); remiges similar, but slightly paler, passing terminally into pure white. Rest of the plumage snow-white. "Bill bright orange-yellow, tipped with yellowish green; vermilion spot on lower mandible; tarsi and toes flesh-color; iris cream-color" (L. KUMLIEN, MS.[1]). *Adult, in winter:* Similar, but head and neck streaked with dusky grayish. "The bill is wine-yellow, the lower mandible with an orpiment patch near the end; the edges of the eyelids yellow; the feet pale flesh-colored, the claws grayish brown; the iris pale yellow" (MACGILLIVRAY). *Young, first plumage:* Grayish white, the head and neck broadly streaked, the upper parts coarsely spotted with brownish ash-gray; lower parts nearly uniform light brownish ash, the chin and throat white; bill wholly blackish; feet brownish. "The bill is very pale flesh-colored as far as the anterior extremity of the nostrils, beyond which both mandibles are brownish black. The feet are pale flesh-colored, the claws brownish black" (MACGILLIVRAY).[1]

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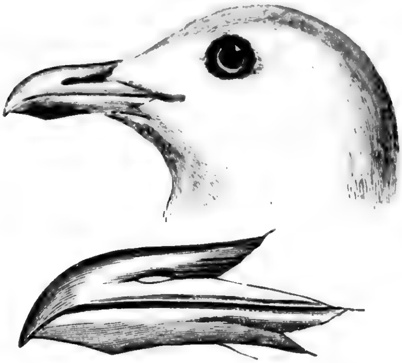
[1] "Bill gamboge-yellow, with a spot of orange-red near the end of lower mandible; the angle of the mouth and the edges of the eyelids are also orange-red. Iris pale yellow. Feet pale flesh-color; claws grayish brown" (AUDUBON).



Wing, 15.40-16.50 (15.76) inches; culmen, 1.65-1.90 (1.75); depth of bill through angle, .60-.70 (.66); tarsus, 2.05-2.20 (2.14); middle toe, 1.70-1.95 (1.81). [Four adults.]

This bird is so close an ally of *L. glaucus* that we must confess our inability to give characters whereby it may invariably be distinguished. There appears to be a nearly complete intergradation in size, or at least some of the larger males of *leucopterus* are equal to the smaller females of *glaucus*. A series collected at Point Barrow, Alaska, by Messrs. Murdoch and Smith, seems to include a form which is intermediate between the two; and we are quite in doubt as to which form some specimens should be referred. Mr. Kumlien ("Bull. U. S. Nat. Mus.," No. 15, p. 98), however, gives the following as characters which appeared to be constant in the living and freshly killed birds which came under his notice: —

"My opportunities for studying *leucopterus* were not very extensive, and my conclusions may be too hasty; but still it is worth while for others, that may get better opportunities, to observe if the following points of difference are constant: —

"First. *Leucopterus*, 24 inches or less; *glaucus*, 27 to 32 inches.

"Second. Tarsus and toes of *leucopterus* in fully adult birds often orange-red, and not flesh-colored, as in *glaucus*.

"Third. Ring around the eye in *leucopterus* flesh-colored; in *glaucus* reddish purple.

"Fourth. Young of *glaucus* in first plumage as light as the bird of the second year; the young of *leucopterus* nearly as dark as the young of *glaucescens*. The bill is also weaker and thinner than in *glaucus*."

The particulars of the history of this species and of the extent of its distribution are not so well known as they probably would be if its resemblance to *Larus glaucus* were not so close; the two species differing chiefly in that the latter is of larger size than the former. It is difficult, however, if not impossible, to distinguish the two when seen at some distance; and it is hence not always safe to apply to either species statements as to its actual presence, except only where the identification has been rendered positive by obtaining a specimen of the bird seen.

The Lesser White-winged Gull is an Arctic species, and its distribution is very nearly identical with that of the Burgomaster. It is found in the northern portions of Asia, Europe, and North America. Middendorff mentions it as one of the birds of Siberia, and includes it in his list of those which penetrate to the farthest north. Mr. Wheelwright was informed that this species breeds on the coast of East Finland,

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[1] "Bill yellow, the tips black. Edges of eyelids pale reddish-orange; iris brown. Feet yellowish flesh-color; claws grayish brown" (AUDUBON).

and that it is only an occasional visitor, generally in the winter, to the other portions of the Scandinavian coast.

This Gull is occasionally seen in the winter on the coast of Great Britain and Ireland, where it was for a long while confounded with the larger Glaucous Gull. It is also found on the Faröe Islands and in Iceland — where, however, it is not known to breed. According to Faber, this is the only Gull which passes the winter in that island without also breeding there in the summer.

Sir James C. Ross, in his last Appendix, states that he found this species breeding on the face of the same precipices with *L. glaucus*, but at a much less height, and in greater numbers. He met with it in Greenland, and afterward in the Shetland Islands. During the first voyages of Ross, and also in those of Sir Edward Parry, many specimens were obtained in Davis Straits, Baffin's Bay, and on Melville Island. Through an error of Temminck, these birds were regarded as being an Arctic variety of *L. argentatus*, and were so described. This Gull is also mentioned by Dr. Walker as having been met with by him near Godthaab, in Greenland. Afterward, while at the mouth of Bellot's Strait, he noted its arrival in May. It was building its nest on the high cliffs which fringe the shores of that strait. It is also named by Professor Reinhardt as a resident species of Greenland, where it breeds, and where it is more or less common at all seasons. Mr. L. Kumlien found it in Cumberland far less common than the *glaucus;* while on the coast of Greenland it was, next to the Kittiwake, the most abundant Gull.

This species is occasional along the entire Atlantic coast in the winter, but is said to be rare near New York. Those individuals which are occasionally met with are chiefly immature birds. This Gull is more abundant in the Bay of Fundy, but is rare there in summer. An occasional pair has been known to breed among the outer islands. In the summer of 1850 I found a pair nesting on one of the Green Islands. The nest was placed on the ground, on the highest point of the land, on the top of a small hillock. This was the only Gull nesting on that island, although on all the others the nests of the *L. Smithsonianus* were quite abundant. The birds were not shy; but they kept out of gunshot, and watched our movements very closely. Unlike the Herring Gulls, they were very quiet, and uttered no sound or cry whatever. There were three eggs in the nest, which was very slightly made.

Mr. E. W. Nelson states that the White-winged Gull is a regular and not uncommon winter resident on Lake Michigan.

Faber was confident that none of this species breed in Iceland. Not an individual was to be seen on the rocks of Faxe and Bredebugt, where *L. glaucus* was breeding in large colonies. Just after the middle of September the first specimens, both old and young, make their appearance on the coast of Iceland, confining themselves to the northern part, among the small inlets, where great numbers pass the winter. Toward the end of April their numbers decreased, and by the end of May nearly all had disappeared. These birds were Faber's daily guests. They came on land to his winter dwelling, and snapped up the entrails thrown to them, fighting fiercely for them with the Ravens. One was so tame that it presented itself at his door every morning at a certain time, that it might be fed and always gave notice of its arrival by a cry. This Gull would indicate to the seal-shooters in the fiord where the seals were to be looked for, by following their track to the sea, and hovering over them in flocks, with incessant cries. It is said to follow, in the same manner, the track of the codfish in the sea, in order to feed upon the booty hunted up by this fish. Faber further states that in the winter (1821) he passed at Debratte, on the southern coast, not a single bird of this species was to be seen. On the 1st of March the shore was free of Sea-Gulls; but early on the 2d the air was filled with numbers of this species which had arrived during the night. The Icelanders concluded from the sudden appearance of the birds that shoals of codfish must have arrived on the coast, and it was soon found that this conjecture was correct. And there, where but a short time before an ornithological quiet had reigned, everything became enlivened by the coming of these birds, which hovered over the nets without intermission, and with incessant cries. Faber afterward heard that this particular species of Gull had been very scarce during that winter on the northern coast, owing to the prevalence of ice. The birds seen by him remained on the southern coast until the middle of May, when they all departed northward to their breeding-places.

During the winter these Gulls were Faber's weather-guide. If they swam near the shore with their feathers puffed out, then on the following day storms and snow were to be expected. In fine weather the birds soared high in the air. These Gulls often sat by hundreds on a piece of ice, and in this way were drifted many miles. Their habits differ from those of the Glaucous Gull, which moves with more energy, while the *leucopterus* in its flight and deportment is the more graceful of the two. The latter is said to hover over its prey, to be somewhat greedy, always active, and never afraid to fight for its food with antagonists of equal or even superior strength.

Mr. Wolley kept one of these Gulls alive for several weeks when in Iceland. It had been caught with a fish-hook, and in a day or two became so tame as to eat in his presence.

Audubon observed but few birds of this species on the coast of Labrador, nor did he think that any were breeding there at the time of his visit. Their flight he speaks of as being similar to that of the Herring Gull, while the *leucopterus* is less shy, proceeds farther up rivers and creeks, and its notes are neither so loud nor so often heard as those of the other species.

Yarrell describes the egg of this Gull as being 2.50 inches in length by 1.75 in breadth, and of a pale greenish-white color, with numerous spots, and speaks of two shades of brown, with other spots of a bluish gray scattered generally over the surface.

Mr. MacFarlane procured several sets of the eggs of this species on the Arctic coast in July, 1863, and again in July, 1865.

Larus Kumlieni.

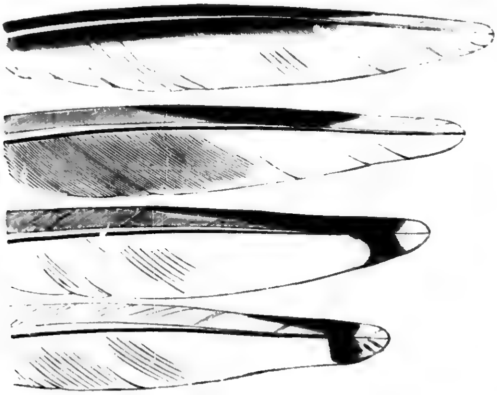
KUMLIEN'S GULL.

? *Larus* (*Glaucus*) *glaucescens*, Bruch, J. f. O. 1853, 101 (part?; nec *L. glaucescens*, Naum. 1840).
? *Larus* (*Laroides*) *chalcopterus*, Bruch, J. f. O. 1855, 22 (part?).
? *Larus chalcopterus*, Lawr. in Baird's B. N. Am. 1858, 843. — Coues, Pr. Phil. Ac. 1862, 295.
Larus glaucescens, Kuml. Bull. U. S. Nat. Mus. no. 15, 1879, 98 (nec Naum. 1840). — Brewst. Bull. N. O. C. VIII. no. 2, April, 1883, 125.
Larus Kumlieni, Brewst. Bull. N. O. C. VIII. no. 4, Oct. 1883, 216. — Park, The Auk, Vol. I. April, 1884, 196.

Hab. North Atlantic coast of North America; breeding in Cumberland Gulf (Kumlien), and visiting the northern Atlantic coast of the United States in winter. Grand Menan and Bay of Fundy (Brewster); mouth of Mohawk River, New York, Jan. 27, 1884 (Park).

Sp. Char. *Adult* ♂, *in summer* (No. 76225, U. S. Nat. Mus., Cumberland Sound, June 14, 1878; L. Kumlien): Head, neck, lower rump, upper tail-coverts, tail, and entire lower parts pure white; mantle and wings delicate pale pearl-blue, exactly as in *L. leucopterus* (and in the paler specimens of *L. argentatus*). Secondaries very broadly and very abruptly tipped with pure white.

Primaries pale pearl-blue, like the mantle, but the five outer primaries marked with deep ash-gray, as follows: the first quill has the outer web ash-gray to within three inches of the tip, measured along the shaft, and an inch farther along the edge; the inner web has a paler ash-gray stripe about .25 of an inch wide next the shaft, and extending to within 2.75 inches of the tip; the remainder, also the terminal portion of the outer web, being pure white. The second quill has no ash-gray on the inner web, which is very pale pearl-blue basally, and changing very gradually into pure white toward the end; the outer web is pure white for the space of 2.50 inches from the tip (measured along the shaft), whence begins an elongated space of ash-gray, occupying the full width of the web for about 1.25 inches, then gradually narrowing toward the edge, and finally disappearing at a point a little more than six inches from the tip of the quill. The third quill has an abruptly defined white tip about half an inch in extent, this being immediately preceded by an ash-gray bar, more than half an inch wide, entirely across the inner web, and confluent with the space of the same color on the outer web, which extends toward the base of the feather for the distance of five inches from the tip, though occupying the full width of the web for only about two inches. The *fourth quill* is similarly marked, except that the ash-gray is fainter and less extended, especially on the outer web, where it follows the shaft for only the width of the bar on the inner web, while along the edge it reaches to a distance of less than 2.50 inches from the tip; anterior to these gray spaces both webs are pure white for about 1.25 inches, when this color gradually changes to the prevailing pale pearl-blue. The *fifth quill* has the terminal two inches white, but this slightly relieved by a nearly obsolete small spot of light gray on each web, about .60 of an inch from the tip. The remaining primaries are uniform pale pearl-blue, with broad white tips, the two colors passing gradually together. "Iris cream-color; bill yellow, with vermilion spot on lower mandible; orbital ring reddish purple; legs and feet flesh-color" (KUMLIEN, MS.). Total length (before skinning), 24.00 inches; wing, 16.00; tail, 6.60; culmen, 1.90; depth of bill at base, .70, through angle, .65; tarsus, 2.40; middle toe, 1.95.



Larus Kumlieni.

Adult ♀, in summer (No. 76229, U. S. Nat. Mus., Annanactook Harbor, head of Cumberland Gulf, June 20, 1824; L. KUMLIEN): Similar to the adult ♂, as described above, but only four outer primaries marked with ash-gray, and the pattern of these markings somewhat different, as follows: On the outer web of the *first quill* the gray color is darker, inclining to slate-color; on the *second quill* the spot near the end of the inner web is larger and more rounded; the *third quill* has the subterminal gray band quite interrupted, the portion indicated being, in fact, very faint and badly defined; and the *fourth quill* on one side is immaculate, while on the other there is a just perceptible indication of a spot near the tip of the inner web, while on the outer the gray space is much broken by a white freckling posteriorly. "Iris cream-color; bill bright orange-yellow, tipped with yellowish green, and with vermilion spot on lower mandible; ring round eye purplish flesh-color; tarsi and toes flesh-color" (KUMLIEN, MS.). Total length (before skinning), 22.00 inches; wing, 15.00; tail, 6.40; culmen, 1.60; depth of bill through base, .60; through angle, .55; tarsus, 2.15.

In his original description of this species, Mr. Brewster gives the following measurements of additional specimens, which we have not had the opportunity of examining: —

(1) *Adult*, from Bay of Fundy (obtained about Nov. 1, 1881), mentioned by Mr. Brewster in "Bull. Nutt. Orn. Club," April, 1883, p. 125: "Wing, 16.00 inches; culmen, 1.88; bill from nostril, .88; gape, 2.75; height at nostril, .66; do. at angle, .66; tarsus, 2.25; middle toe and claw, 2.30; tail, 6.50."

(2) *Adult* ♂, Grand Menan, New Brunswick, Jan. 21, 1883: "'Length, 23.75 inches;' wing, 17.00; culmen, 1.85; bill from nostril, .89; gape, 2.75; height at nostril, .65; do. at angle, .65; tarsus, 2.30; middle toe and claw, 2.28; tail, 7.22."

(3) *Immature*, Bay of Fundy, February, 1883: "'Length, 23.50 inches; extent, 50.00;' wing, 15.50; culmen, 1.65; bill from nostril, .89; gape, 2.50; height at nostril, .56; do. at angle, .60; tarsus, 2.10; middle toe and claw, 2.15; tail, 6.90."

Another specimen, a female, apparently not quite in mature plumage, shot Jan. 27, 1884, on the Mohawk River, near its junction with the Hudson, and mentioned by Mr. Austin F. Park in "The Auk" for April, 1884, p. 196, measured as follows: "Length, 23.00 inches; extent, 51.75; wing, 15.75; bill, 1.60; from nostril, .80; from gape, 2.60; height at nostril, .60; at angle, .63; tarsus, 2.20; middle toe and claw, 2.25; tail, 7.00." Color of irides, one day after death, "pale grayish brown; of its bill, light watery yellow, with a greenish shade near the base, and a small red spot in a little cloud of dusky on each side of the lower mandible above the angle." Legs and feet flesh-color.

According to Mr. Brewster ("Bull. Nutt. Orn. Club," October, 1883, p. 218), the characteristics of this species "are pretty uniformly maintained" among the four specimens examined; "but there is some individual as well as seasonal variation. Thus Mr. Merrill's bird differs from the type in having a more decided approach to a subterminal bar on the second primary, where a transverse spot of gray on the inner web is continued across to the shaft, but fails to connect with a smaller corresponding spot on the edge of the outer web. It also has a dusky spot in front of the eye, and some obscure mottling on the crown and nape — probably seasonal (winter) characteristics.

"Mr. Smith's specimen is evidently immature. Its entire head and neck, and even the breast, are mottled with dusky, and the bill is greenish at the base. The mantle, however, is perfectly pure, and the wings show no traces of immaturity. The bill is much weaker and more depressed than in the other examples. The pattern of the primaries is essentially the same, but there is a greater extension of gray, especially on the first two feathers, where it occupies a longer space on the outer webs, and on the second primary forms a complete subterminal bar.

"In Mr. Welch's example the fifth as well as the second primary has a perfect subterminal bar, and the sixth shows an interrupted one; while the slate spreads over the greater part of the webs of the first three feathers, except terminally. This extension of the dark color restricts the white spaces at the ends of the second, third, fourth, and fifth primaries to rounded apical spots which resemble those of *glaucescens*. There is a further approach to *glaucescens* in the unusually deep shade of the mantle and the bluish cast of many of the light areas on the primaries; but the mantle is still much lighter than in any specimen of *glaucescens* which I have seen."

Mr. Park's specimen, according to Mr. Brewster ("The Auk," April, 1884, p. 196), is most nearly like Mr. Welch's among those he had previously examined. "The blue of the mantle is similarly deep, and the slate-gray of the primaries perhaps even more extended, the first three feathers having their outer webs almost wholly dark, except terminally, where the white apical spots, although present, are unusually restricted. . . . I may add that Mr. Park's specimen has an unusually short stout bill, which is further peculiar in having the superior outline of the maxilla almost perfectly straight from the base to the angle."

Larus Kumlieni is apparently a distinct species, having its nearest ally in *L. argentatus*, but related somewhat to *L. leucopterus*, and perhaps, as Mr. Brewster has suggested, also to *L. glaucescens*. From the latter, however, it seems to us to differ rather materially in size, in the form of the bill, and in the pronounced pattern of the quill-markings. The latter character, however, is, according to Mr. Brewster, somewhat variable.

In case the present bird should prove to be not a distinct species, only two possible explanations of its characters occur to us; namely: (1) That it may be a hybrid between *L. argentatus* and *L. leucopterus*; or (2) that it may represent extreme old age of the former. The first of these hypotheses is rendered extremely improbable from the fact that Mr. Kumlien found this bird breeding in considerable numbers near the head of Cumberland Gulf; while the second is disposed of by the circumstance that at least one of the known specimens is in immature plumage, but still possessing gray instead of black quill-markings, while specimens in the first plumage were also obtained by Mr. Kumlien.

Mr. Kumlien's account of this species (which he erroneously identified with *L. glaucescens*) is as follows: —

"So far as I am aware, this is the first instance on record of this bird being taken on the Atlantic coast. They are quite common in the upper Cumberland waters, where they breed. Arrived with the opening of the water, and soon began nesting. The nest was placed on the shelving rocks on high cliffs. Two pairs nested very near our harbor; but the Ravens tore the nest down and destroyed the eggs. Only a single well-identified egg was secured. This Gull is unknown to Governor Fencker on the Greenland coast. They remained about the harbor a great deal, and were often observed making away with such scraps as the cook had thrown overboard; were shy, and difficult to shoot. Full-grown young of this species were shot in the first days of September; these were even darker than the young of *L. argentatus*, the primaries and tail being *very nearly black*."[1]

Larus Nelsoni.

NELSON'S GULL.

Larus Nelsoni, HENSH. The Auk, Vol. I. July, 1884, 250.

SP. CHAR. *Adult* (No. 97253, U. S. Nat. Mus., St. Michael's, Alaska, June 20, 1880; E. W. NELSON): Mantle pale pearl-blue, exactly as in *L. argentatus*. Primaries same color as the mantle, but broadly tipped with white, and the outer five marked with deep brownish gray, as follows: First quill with the outer web deep brownish gray to within three inches of the tip (next to the shaft), the inner web rather lighter, more ashy, gray, for about the same distance, but broadly edged with white (the gray about .40 and the white .80 of an inch in width), this white confluent with that of the terminal portion. On the second quill the white tip is 2.40 inches long, the deep brownish gray space being 2.30 inches long next the shaft, but much more (some 4.50 inches) along the edge, the very oblique anterior outline being very sharply defined against the pale pearl-blue of the basal portion. The third quill has the tip white for .90 of an inch (measured along the shaft), the outer web then deep brownish gray for 2.70 inches; the inner web is pale pearl-gray, like the basal portion of the outer web, but at about 2.50 inches from the tip it fades gradually into white — which color, however, is interrupted near the end of the quill by an indistinct broad spot of mottled grayish, extending quite across the web. The fourth quill is white for about the terminal inch, the outer web then brownish gray for 1.10 inches along the shaft and 2.50 inches along the edge, the pearl-gray of the remaining portion perceptibly paler next the brownish gray space; the inner web has a very indistinct spot of brownish gray about opposite the end of the dark space on the outer web, the succeeding 1.40 inches being nearly white, but changing gradually into the light pearl-gray of the remaining portion. The fifth quill fades terminally into white at about 1.80 inches from the tip, but the white portion marked on both webs by a spot of brownish gray; that on the outer web 1.80 inches long on the edge of the quill, but less than half as much along the inner margin; that on the inner web about .50 of an inch broad, and much more distinctly defined than the corresponding spots on the third and fourth quills; neither spot touches the shaft. The remaining primaries are pale pearl-gray, fading gradually to white at the ends. The head, neck, rump, upper tail-coverts, tail, and entire lower parts are pure white. Bill deep wax-yellow, the tip whitish, the mandible with a large bright red spot at the angle. Wing, 18.25 inches; tail, 7.75; culmen, 2.35; depth of bill at base, .80, through angle, .80; tarsus, 3.05; middle toe, 2.40.

Although at first sight this bird has some resemblance to *L. glaucescens*, it may readily be distinguished by the very differently shaped bill, the paler color of the mantle, and the totally different markings of the primaries. It is, in fact, much more closely allied to the larger race of *L. argentatus*, the principal difference consisting in the brownish gray, and much more restricted, instead of black, spaces on the primaries. In all examples of *L. argentatus* we have been able to examine, the black portion of the primaries involves a considerable portion of the inner webs; but in the present bird the darker color is confined almost entirely to the outer web, the inner webs being pale pearl-gray, like the mantle, and fading into white at the end of the quills.

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[1] "Bull. U. S. Nat. Mus." No. 15, pp. 98, 99.

It is barely possible that this specimen may represent a very old *argentatus* with the black faded to brownish gray, and unusually restricted on account of great age; but until this can be proven we prefer to keep it separate. At any rate, *Larus Nelsoni* apparently holds exactly the same relation to *Larus argentatus Smithsonianus* that *L. Kumlieni* does to the smaller race of the Herring Gull.

Larus glaucescens.

THE GLAUCOUS-WINGED GULL.

Larus glaucescens, NAUM. Naturg. Vög. Deutschl. X. 1840, 351. — LAWR. in Baird's B. N. Am. 1858, 842. — BAIRD, Cat. N. Am. B. 1859, no. 657. — COUES, Pr. Ac. Nat. Sci. Philad. 1862, 295; Key, 1872, 311; Check List, 1873, no. 545; 2d ed. 1882, no. 770; B. N. W. 1874, 623. — SAUNDERS, P. Z. S. 1878, 167. — RIDGW. Nom. N. Am. B. 1881, no. 662.

Larus (*Glaucus*) *glaucopterus*, "KITTLITZ," BRUCH, J. f. O. 1853, 101.

"*Larus chalcopterus*," LAWR. in Baird's B. N. Am. 1858, 843 (not of LICHT. 1854). — BAIRD, Cat. N. Am. B. 1859, no. 659. — COUES, Pr. Ac. Nat. Sci. Philad. 1862, 295.

HAB. North Pacific coast of North America, from Washington Territory to Alaska.

SP. CHAR. *Adult, in summer:* Mantle delicate pearl-blue (deeper than in *leucopterus*); primaries similar, becoming slightly darker (the fourth and fifth abruptly) terminally, all abruptly tipped with white; the outer quill with the tip and a space of an inch or more in extent anterior to a subterminal deep ashy spot white; the sixth with a broad subterminal bar of deep ash, preceded and followed by white spaces. Rest of the plumage, including almost all the exposed portion of the secondaries, snow-white. *Adult, in winter:* Similar, but head and neck clouded (!) with sooty grayish. *Young, first plumage:* Prevailing color deep ash-gray, nearly uniform below, relieved above by a coarse irregular spotting of grayish white, or pale dull buff, the head and neck indistinctly streaked. Primaries and rectrices pale brownish gray, with somewhat of a glaucous cast. Bill wholly dusky, brownish basally; legs and feet brownish. *Young, first winter:* Mantle mixed brownish ash and pearl-blue; primaries and tail uniform brownish ash-gray; head, neck, and lower parts grayish white, clouded with brownish gray, the lower surface nearly uniform brownish gray. Bill yellowish on basal half and tip, the intermediate portion dusky black; legs and feet pale brownish (in skin).

Wing, 16.25–17.30 (average, 16.92) inches; tail, 7.50–8.25 (7.81); culmen, 2.20–2.60 (2.42); depth of bill through angle, .80–.90 (.82); tarsus, 2.35–2.90 (2.62); middle toe, 2.05–2.45 (2.25). (Six adults.)

In this species the form of the bill approaches decidedly to that so characteristic of *L. occidentalis* and *L. dominicanus*, the angle being very prominent and the depth through the base proportionally narrow.

This large and handsome Gull bears a very close resemblance to, and is very nearly as large as, the Burgomaster Gull of the Atlantic coasts. It appears to replace that species in the southern portions of the Pacific waters. It is found on the northeastern coasts of Asia, and on the entire Pacific coast of North America almost as far south as the Mexican line. In most respects its habits appear to bear a very close resemblance to those of the *glaucus*, but it is not so exclusively northern as that species. It is abundant along the Arctic Ocean as far to the west as the Mackenzie River, along the banks of which it was found by Mr. Ross. It was met with on the shores of Vancouver Island by Mr. R. Browne; and Mr. Bischoff obtained a large number of specimens at Sitka, and others at Kadiak. Mr. Dall mentions it as being a common species on the west coast, from California northward. It also occurs as far east as Cumberland, where Mr. L. Kumlien found it quite common in the upper Cumberland waters, and where it was breeding. These Gulls came as soon as there was open water. Their nests were placed on the shelving rocks, on high cliffs. They are not known to occur on the coast of Greenland.[1]

Dr. Cooper mentions this as being an exclusively winter bird in California, where it makes its appearance in October in large numbers, wandering along the coast as far south as San Diego, and even farther, remaining until May. A few individuals in immature plumage occur all the year round.

This Gull feeds on dead animal matter of all kinds, as well as on fish and crustaceans; but it is very rarely seen in the interior, or far inland. Its voice is rather high, yet not loud or querulous, being very different from that of the noisy *occidentalis*, which in many other respects it very closely resembles. Dr. Cooper is quite sure that it does not breed on any island south of San Francisco, or on any part of the coast as far north as latitude 49°.

Mr. Dall found this species resident on all the Aleutian Islands which he visited, and by far the most abundant and prevalent, others being only occasionally observed. The habit of this and of other species of breeding on isolated rocks and small islands is attributed by him to their appreciation of the immunity thus obtained from the attacks of foxes on the eggs and the young broods. On the 2d of June, 1872, many eggs in a pretty fresh condition were obtained on the Chica Rocks and islets in the Akutan Pass. The eggs were very abundant, not more than three being usually found together, and they were laid in almost any small depression of the ground, with little or no attempt at a lining. About the 18th of July, in the Shumagins, at Coal Harbor, on a peculiar high round island, an abundance of eggs were obtained; but most of them had been incubated for some time. In this case, the island being covered with tall, rank grass, the nests were almost concealed; and either from the dead grass naturally occurring in the depression, or for some other reason, the nests all had more or less of this material in and about them. The Gulls built solely on the top of the highest part of the island, in the grass, and never in the lower portion near the shore, or on the shelves of the rocky and precipitous sides. Mr. Dall also states that this species is a resident of the Aleutian Islands throughout the year. The young of this bird were obtained in the down, about the middle of July; and the iris of these, as well as their bill and feet, was of a black color.

The late Mr. James Hepburn found this Gull breeding on Williamson's Rock, not far from Smith's Island, and near to and south of San Juan, in the Straits of San Juan de Fuca.

Eggs of this species in the Smithsonian Collection (No. 12852), obtained at Sitka, have a ground-color of a pale grayish drab, with markings of a pale lilac-gray and a rich dark sepia. The ground-color in various specimens varies from a pale blue to a brownish clay-color. Four eggs present the following measurements: 2.70 inches by 1.85; 2.80 by 1.90; 2.85 by 1.95; 2.75 by 1.95.

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[1] Mr. Kumlien's observations here quoted relate to what has since been described by Mr. Brewster as *Larus Kumlieni*. — J. A. A.

Larus marinus.

THE BLACK-BACKED GULL.

Larus marinus, LINN. S. N. ed. 10, i. 1758, 136; ed. 12, I. 1766, 225. — NUTT. Man. II. 1834, 308. — AUD. Orn. Biog. III. 1835, 305; V. 1839, 636, pl. 241; Synop. 1839, 329; B. Am. VII. 1844, 172, pl. 450. — LAWR. in Baird's B. N. Am. 1858, 844. — BAIRD, Cat. N. Am. B. 1859, no. 660. — COUES, Key, 1872, 312; Check List, 1873, no. 546; 2d ed. 1882, no. 771; B. N. W. 1874, 624. — RIDGW. Nom. N. Am. B. 1881, no. 663.

Larus niger, BRISS. Orn. VI. 1760, 158.

Larus nævius, LINN. S. N. I. 1766, 225.

Larus maculatus, BODD. Tabl. P. E. 1783, 16 (nec BRÜNN. 1764).

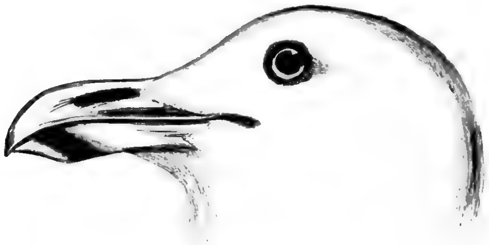
Larus maximus, LEACH, Cat. 1816, 40.

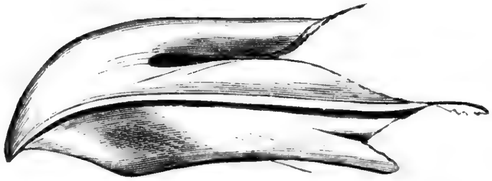
Larus Mülleri, BREHM, Vög. Deutschl. 1831, 729.

Larus Fabricii, BREHM, t. c. 730.

HAB. Coasts of the North Atlantic; in America, south in winter to Long Island and the Great Lakes?

SP. CHAR. Size very large (about equal to *L. glaucus*). *Adult, summer plumage:* Mantle dark brownish slate, the secondaries and tertials broadly (the former abruptly) tipped with white; first primary black, with the end for a distance of about 2.50 inches, white; second similar, but the white tip marked near the end by a broad black bar on one or both webs; fourth quill black, tipped with white; fifth and sixth quills more slaty, tipped with white, and with a wide black subterminal space, preceded by an irregular white bar; shorter quills lighter slate, widely tipped with white. Rest of the plumage pure white. "Bill gamboge-yellow, the lower mandible bright carmine toward the end; edges of eyelids bright carmine; iris silvery; feet yellow;[1] claws black" (AUDUBON). *Adult, in winter:* Similar to the summer plumage, but head and neck, superiorly and posteriorly, streaked with dusky. *Young, first plumage:* Above, dark slate-brown, the feathers broadly bordered with pale dull buff; remiges uniform brownish dusky, with narrow whitish tips; rectrices dusky, tipped with white and crossed near the end by a narrow band of grayish or brownish white. Head, neck, and lower parts dirty white, the head and neck, superiorly and posteriorly, streaked, and the lateral lower parts clouded or irregularly spotted, with grayish brown. Bill dusky, black terminally and brownish at the base; iris dark brown; legs and feet "dusky whitish" (COUES, MS.). *Downy young:* Prevailing color grayish white, the upper parts marbled or irregularly spotted with dull grayish. Head marked with numerous irregular spots of dull black, somewhat as follows: forehead with a narrow mesial streak; crown with two spots, one behind the





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[1] Other authorities give the color of the feet as flesh-color; and it seems that Audubon made a mistake in calling them yellow. Macgillivray describes the fresh colors of the adult male in winter as follows: "The bill is light yellow, the lower mandible with an orange-red patch near the end; the edges of the eyelids orange-red, the iris pale yellow; the feet flesh-colored, the claws dusky."

other, with a minute spot on each side, opposite the space between the two larger spots; occiput with four large spots arranged in a transverse series; below these, three others, their position corresponding to the spaces between the spots of the series above; below these three spots a ragged band across each side of the nape, the two separated by a considerable interval; then follow two or three spots across the lower part of the nape, their form and arrangement being rather indefinite. On the lores are three small spots arranged longitudinally; a spot over each eye; there are also several irregular large spots on the lower part of the head, rather less distinctly defined than the others. Total length, about 10.00 inches; bill (from culmen), 1.00 inch.[1]

Total length, about 30.00 inches; wing, 17.60–19.50 (average, 18.48); culmen, 2.40–2.60 (2.49); depth of bill through angle, .98–1.05 (1.01); tarsus, 2.70–3.10 (2.83); middle toe, 2.10–2.50 (2.34). (Five adults.)

The Great Black-backed Gull — or Saddle-back, as it is more commonly called on the American coast — is a North Atlantic species, common to both the European and the American coasts, and found as far north as the Arctic Circle. It also occurs in the Pacific, as Mr. Swinhoe met with it in Japan in May ("Ibis," 1874). It is found along the entire coast of Europe and North Africa, from Norway to Madeira; and it breeds from the northern coast of France and Great Britain northward.[2]

The Messrs. Godman found this species breeding in large numbers on all the islands off the coast of Norway; and Mr. Wheelwright also affirms that it breeds along the coast of Scandinavia as far as North Cape; but states that in the southern portion of that country it is more common on the Baltic shore than along the Cattegat and the North Sea. It also breeds sparingly on Lake Wener.

Mr. Godman, in his paper on the Birds of Madeira and the Canary Islands ("Ibis," 1871), states that several birds of this species followed his vessel from Lisbon until they were nearly in sight of the Canaries, although he did not afterward meet with any in that group of islands. He was informed, however, that these birds breed on the Island of Alegranza. Mr. Saunders found them not uncommon, in their immature plumage, on the coast of Spain; adults were comparatively rare.

According to Yarrell, this species is found throughout the year on various parts of the British coast. It does not, however, generally occur in large numbers, and is most frequently seen in pairs. It remains all the year on the flat shores at the mouth of the Thames, where it is a marsh-breeder; both male and female birds assisting in building their grassy nests, and driving other birds away.

According to Thompson, it is a resident species in Ireland. It is found in Wales in abundance on the extensive sandy flats of the coast; and it also breeds in Scotland in considerable numbers on Bass Rock, in the Firth of Forth, and in the firths of Sunderlandshire.

According to Mr. Hewitson, this Gull breeds in abundance on some of the islands of the Orkney and Shetland groups. There it selects with care a place surrounded by the waters of some inland lake, on some spot difficult of access. The eggs, which are excellent food, are a valuable acquisition to the owners of the islands, and the birds are allowed to sit upon their third set only. One gentleman informed Mr. Hewitson that in a single season he had secured for winter use sixty dozen of the eggs of this bird on one island, although its extent scarcely exceeds half an acre.

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[1] Described from No. 84765, from Labrador. It may be remarked with regard to the markings of the head, that while in the main those of the two sides correspond in position, some of them are asymmetrical; thus, the left lore has the three spots near together and roundish in form, the middle one above the others; the other lore has these spots much farther apart, in a line with one another, the middle one much elongated; there is but one spot over the right eye, two over the left.

[2] The bird found in the North Pacific is the closely allied *L. schistisagus*, recently described by Dr. Stejneger. — J. A. A.

This species is observed on the coasts of Germany, Holland, and France, is occasional in Italy, and was found by the Russian naturalists in the vicinity of the Caspian Sea.

On the American coast it appears to be present during the breeding-season from the Bay of Fundy to the coast of Greenland, and in the winter it wanders south as far as the coast of New Jersey. A few in immature plumage, according to Audubon, wander even to Florida.

According to Professor Reinhardt, it is a resident species of Greenland. It is rare in the summer in the Bay of Fundy. All that I met with there were in the immature plumage, and were apparently solitary and unmated birds. I saw none in the mature plumage; but was assured, however, that they do so occur, and that a few of them breed there. This species becomes quite abundant in that locality in the winter; and it is known as the "Farmer Gull" — a name indiscriminately given to the immature forms of two or three species, and hence having no specific significance.

According to the observations of Giraud, it is not, as a general rule, abundant on the coast of Long Island, although in certain exceptional seasons it has been seen there in considerable numbers.

This species is of rare occurrence at Bermuda, where a living specimen was taken Dec. 24, 1851. It is a not uncommon visitor to the Great Lakes during the winter, especially to Lake Michigan.

Audubon states that the shores of Labrador for an extent of three hundred miles afford stations to which this species resorts during spring and summer, where it is abundant, and breeds in large numbers. Its nest was usually found placed on the bare rock of some low island, sometimes beneath a projecting shelf, sometimes in a wide fissure. It is formed of moss and seaweed carefully arranged, has a diameter of about two feet, being raised on the edges to the height of five or six inches, and is seldom more than two inches thick in the centre, where feathers, dry grass, and other materials are added. The eggs — three in number — are described as 2.87 inches in length by 2.13 in breadth, broadly ovate, rough, but not granulated, of a pale earthy greenish gray color, irregularly blotched and spotted with brownish black, dark umber, and dull purple. The eggs are deposited from the middle of May to the last of June. The old birds do not leave their nests for any considerable length of time until after the young are hatched. Both sexes incubate, and supply each other with food. During the first week the young are fed with materials macerated by the parent bird; but afterward the supply is laid by their side. On being approached, the young endeavor to hide themselves; if as much as four or five weeks old, they escape to the water, and swim with great buoyancy. Their cry resembles that of their parents. Several young birds were kept alive by Audubon; these walked the deck with ease, and picked up the food thrown to them, and soon became quite tame and familiar, behaving themselves very much as vultures do.

This bird appears to feed indiscriminately on fish and on other productions of the sea. It is extremely ravenous, and when pressed by hunger it will attack the smaller Gulls. It is also accused of making murderous attacks upon various small land animals. When other food could not be obtained it has been known to frequent the sea-shore and to feed upon dead fish and such substances as are thrown up by the sea. It is exceedingly wary and difficult of approach. Its cry is loud and hoarse.

The flight of the mature bird of this species is firm and steady, rather than long protracted, and at times quite swift, and majestic when executed in extended circles. It usually proceeds in a direct course, with easy, regulated flappings, and in calm weather is fond of soaring to a great height. It is noisy during the breeding-season, but at all other times is comparatively silent. It swims lightly, but slowly; and if wounded may be readily overtaken, as it has no power of diving. The eggs and the young of this species are excellent eating; but the old birds are tough, strong, and unpalatable.

Dr. Sundström, of Stockholm — as quoted by Mr. Dresser — states that this Gull is regarded as a great pest in Sweden, and is destroyed wherever it can be approached, which is not often. It is very destructive of the eggs and young of the Eider and other wild Ducks, and destroys and devours quite large birds.

Mr. N. W. Johnson describes a nest observed by him in Shetland as placed on the ground, among the grass, large in size, and loosely put together. It covered a circle of two and a half feet in diameter, was deeply hollowed, and the materials used in its formation were dry tufts of grass, sheep's wool, heather-moss, and large feathers. When its nest is being robbed the great Black-backed Gull sails over head, occasionally making swoops at the intruder, and uttering loud, indignant croaks.

Dr. Bryant, in his visit to Labrador in 1860, mentions having found it breeding on almost all the grassy islands north of Romaine, and in greater abundance as he approached the Straits. He is quite sure that it is by no means so rapacious and tyrannical as it has been represented as being. On Greenlet Island — the abode of a great number of Eider Ducks — he found twenty-two nests of this bird, one of them not a foot from the nest of an Eider, both containing eggs. He did not see a single eggshell, or any appearance of eggs having been destroyed by the Gulls. This species is found in greater or less numbers on all the islands where the Herring Gulls breed, apparently on as good terms with them as with those of its own species. Dr. Bryant saw no peculiarity in the flight of this species to distinguish it from other Gulls. Its nest is oftener placed on the bare rock than is that of the Herring Gull, and is not infrequently found singly on some small rocky island — which is never the case with the other species. The eggs are three in number, and are generally easily distinguished from those of the Herring Gull by the color as well as the size. The spots are fewer and larger; and this difference is almost a specific character. A light clay is the prevailing ground-color, but it varies to a brownish gray or a brownish white. The markings are the same in respect to color as in the other species of this genus; but in size are smaller, and more rounded and regular.

Mr. Dresser describes the egg of this species as olive-brown in color, sometimes darker, and sometimes lighter, spotted, and blotched with dark brown. As compared with the eggs of *Larus glaucus*, it is darker, and has not the greenish tinge which usually pervades the eggs of the latter species. Dr. E. Rey, of Halle, gives as the average size of twenty-three eggs of this species: 2.83 inches in length, by 2.02 in breadth. The largest measured 3.21 inches by 2.05, and the smallest 2.71 by 1.94.

Larus schistisagus.

THE SLATY-BACKED GULL.

? *Larus* (*Dominicanus*) *fuscescens*, BRUCH, J. f. O. 1853, 100 (part).

Larus cachinnans, KITTL. Denkw. I. 1858, 336 (nec PALL. 1826). — STEJN. Naturen, 1884, 6.

Larus argentatus, var. *cachinnans*, SCHRENCK, Reise, Amurl. I. 1860, 504.

Larus marinus, SWINH. Ibis, 1874, 165 (nec LINN.). — SAUNDERS, P. Z. S. 1878, 180. — BLAKIST. & PRYER, Ibis, 1878, 217; Trans. Ass. Soc. Jap. VIII. 1880, 189; ib. X. 1882, 104. — SEEB. Ibis, 1879, 24. — RIDGW. Bull. Nutt. Orn. Club, 1882, 60. — BEAN, Pr. U. S. Nat. Mus. 1882, 168. — NELSON, Cruise of the Corwin, 1883, 107. — BLAKIST. Amend. List B. Jap. 1884, 20.

Larus pelagicus, TACZAN. Bull. Soc. Zool. France, 1876, 263 (nec BRUCH); Orn. Faun. Vost. Sibir. 1877.

? *Larus affinus*, NELSON, Cruise of the Corwin, 1883, 107 (Plover Bay).

Larus schistisagus, STEJNEGER, The Auk, Vol. I. July, 1884, 231.

HAB. North Pacific, chiefly on the Asiatic side. Japan (BLAKISTON & PRYER, SAUNDERS, and SEEBOHM, ll. c.); Amoor River (SCHRENCK); Behring Island and Petropaulski, Kamtschatka (STEJNEGER); Plover Bay? (NELSON); Unalashka (BEAN); Herald Island, Arctic Ocean, and Port Clarence, Alaska (RIDGWAY, l. c.).

SP. CHAR. *Adult* ♂ (No. 92825, U. S. Nat. Mus., Behring Island, Kamtschatka, May 5, 1883): Head, neck, rump, upper tail-coverts, tail, and entire lower parts pure white; mantle and wings deep plumbeous, or bluish slate-gray, much darker than in *L. occidentalis*, and altogether more bluish than in *L. marinus*. Four outer primaries slaty black, more grayish basally and on the inner webs, the latter fading into bluish gray toward the edge; outer quill with the terminal 2.10 inches (measured along the shaft) white, both webs with a small blackish spot on the edge, about .40 of an inch from the tip; second quill with the terminal white spot only .40 of an inch in extent, but the inner web with a large oval spot of white, .90 of an inch long, and extending entirely across, and situated .50 of an inch anterior to the terminal white spot; third quill with the terminal white spot about the same size as that on the second, the inner web with a grayish white space, beginning about 1.60 inches from the tip, abruptly defined, with a deeply convex outline, against the black subterminal portion, but not distinctly contrasted with the plumbeous-gray of the remaining portion of the web; fourth quill similar to the third, but the white spot rather more distinct, and beginning only 1.30 inches from the tip; fifth quill similar, but with the white spot on the inner web still larger and still nearer the tip (only 1.00 inch), and the outer web dark plumbeous-gray to within about 1.50 inches of the end, the extremity of this grayish portion obtusely wedge-shaped, and fading into white at the extremity; sixth quill without any distinct black spot on the inner web, which is white for about 1.80 inches (measured next the shaft) from the tip, the white rather abruptly defined against the plumbeous of the anterior portion; outer web white for .60 of an inch, then slaty black for about .70 of an inch (measured along the edge), the anterior outline deeply concave, and enclosing a rather indistinct grayish white space, which deepens gradually into the dark plumbeous-gray preceding it. Remaining primaries without any black, being uniform deep plumbeous, with very broad and rather abrupt white tips. "Iris clear naples yellow, or rather a yellowish cream-color; bill deep gamboge-yellow, with whitish tip and tomia; an orange-red spot on each side of the lower mandible; angle of the mouth yellowish flesh-color; naked eye-ring reddish violet gray; feet pinkish flesh-color, nails horny black, with whitish tips" (Colors of freshly killed bird, *fide* STEJNEGER, MSS.).

Wing, 18.10 inches; tail, 7.50; culmen, 2.35; depth of bill through base, .80, at angle, .90; tarsus, 2.75; middle toe, 2.40.

This species is apparently the North Pacific representative of *L. marinus*, from which it may easily be distinguished by the different color of the mantle, which is of a deep bluish slate, or plumbeous, without any of the brown tinge that is always seen in *marinus*. The latter has no gray "wedge" on the inner web of the first primary, and has on the second quill a subapical white crossbar. The white subapical spot on the third primary of *schistisagus* is altogether wanting in *marinus*.

From *L. cachinnans* the present bird differs in having a very much darker mantle (*cachinnans* being decidedly paler than *occidentalis*, while *schistisagus* is much darker), flesh-colored instead of yellow feet, in being of larger size, and in possessing other marked characters.

Little is known of the habits of this bird, which has been confounded by authors with various other species, as is indicated by the above synonymy. The only complete specimen which I have been able to examine is the type described above, and which I have been kindly allowed the privilege of describing in advance of the publication of Dr. Stejneger's description intended for the next number of the "The Auk." A much fuller account than that herein given will be published with Dr. Stejneger's important report upon the birds of the Commander Islands, now in course of preparation.

Larus occidentalis.

THE WESTERN GULL.

Larus occidentalis, Aud. Orn. Biog. V. 1839, 320; Synop. 1839, 328; B. Am. VII. 1844, 161. — Lawr. in Baird's B. N. Am. 1858, 845. — Baird, Cat. N. Am. 1859, no. 662. — Elliot. Illustr. Am. B. II. pl. 52. — Coues, Pr. Ac. Nat. Sci. Philad. 1862, 296; 2d Check List, 1882, no. 774. — Saunders, P. Z. S. 1878, 172. — Ridgw. Nom. N. Am. B. 1881, no. 664.

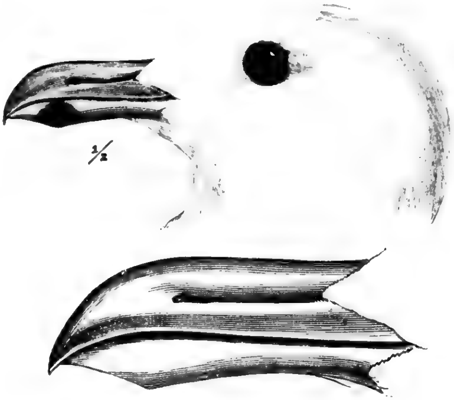
Larus argentatus, var. *occidentalis*, Coues, Key, 1872, 312; Check List, 1873, no. 547 *b*.

Larus argentatus, c. *occidentalis*, Coues, B. N. W. 1874, 626.

"*Larus fuscus!*" Saunders, P. Z. S. 1875, 158 (L. Calif.).

Hab. Pacific coast of North America, breeding from Southern California, northward.

Sp. Char. Rather smaller than *L. argentatus*, except the bill, which is proportionally larger, with the angle of the mandible much more prominent; colors much darker. *Adult, in summer:* Mantle deep plumbeous, the secondaries and tertials very broadly (for one inch or more), and abruptly tipped with pure white. Four outer primaries black, more slaty basally, especially the fourth; outer quill with about two inches of its terminal portion white, crossed near the tip by a wide black bar, on one or both webs; second to fifth quills tipped with white, the fifth abruptly plumbeous for its basal (exposed) two thirds; sixth quill plumbeous, tipped with white, and with a broad subterminal bar of black; remaining shorter quills lighter plumbeous, more broadly and less abruptly tipped with white. Remainder of the plumage snow-white. Bill deep chrome- or wax-yellow, the broad part of the mandible marked by a spot of bright red; iris brown; feet yellow?[1] *Adult, in winter:* Similar, but the head and neck, superiorly and posteriorly, streaked with dusky. *Young, first plumage:* Above, brownish slate, irregularly spotted with grayish white; remiges, rectrices, and primary coverts uniform dull black, narrowly tipped with white; lower parts brownish gray, clouded or irregularly spotted with grayish white — the breast and abdomen sometimes nearly uniform grayish. Bill dusky black terminally, flesh-colored basally; iris brown; legs and feet flesh-color (pale brownish in skin). *Downy young:*[2] Grayish buffy white, the head marked with well-defined black blotches, of indefinite arrangement; upper parts clouded or irregularly blotched with brownish dusky. Lower parts (except throat) immaculate.



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[1] Audubon gives the color of the feet in this species as flesh-color; but in recently prepared skins which we have examined the feet appear to have been rich yellow.

[2] Scarcely distinguishable from young of *argentatus*, but spots about the head blacker and more distinctly defined, the markings of the upper parts also darker.

Wing, 15.25–17.00 (16.10) inches ; culmen, 2.00–2.35 (2.24) ; depth of bill through angle, .85–.95 (.88) ; tarsus, 2.45–2.75 (2.61) ; middle toe, without claw, 2.00–2 45 (2.26). [Eight adults.]

This species, both common on and confined to our northwest Pacific coast, was first described by Audubon from two specimens procured by Mr. Townsend in October, 1836, near Cape Disappointment. He furnished no account of its habits.

Mr. Henshaw mentions it as very numerous in all the bays and inlets of the Pacific coast, where its numbers are greater all the year round than those of any other species. Free from molestation, it has become almost semi-domesticated, and flies about the wharves and over the vessels with a fearlessness of long immunity from molestation. The rocky islets along the coast furnish these birds with safe breeding-grounds. At Santa Cruz thousands had congregated, and were nesting in early June. On one of the small adjoining islets, and the only one accessible, a few pair had nested. The nests were made of a generous supply of seaweed and similar materials, well matted together, the cavity being quite deep. It is probable that this species is also found on the Pacific shores of Asia, as Mr. H. Whitely states ("Ibis," 1867) that he procured several specimens at Hakodadi, in Japan, in December and January.

Dr. Cooper regards the *L. occidentalis* as at once the most abundant and the most characteristic species of the Californian coast. It is everywhere resident, and appears never to leave its home, unless possibly some of these birds residing in summer far to the north come down to California in the winter. Yet he noticed but little diminution in their number in winter north of the Columbia, although he found them in December common as far as the end of the peninsula of Lower California, which is about their southern limit. They breed through all the immense range from Cape Flattery to San Diego, and probably even farther in each direction. Dr. E. Palmer informs me that during his visit to San Diego he was surprised to witness the tameness and familiarity of this species. It wanders about the gardens, door-yards, and streets of that town in great numbers, mixing with the domestic Fowls, and gathers up and eats almost everything, not refusing even potato-parings. It is very tame notwithstanding the rough usage it receives from boys. Dr. Palmer saw numbers perched on the tops of buildings in rows intermingled with the domestic Pigeons. On the coast of California its chief breeding-places are the Farallones, Santa Barbara Island, and the Coronados, just south of the Mexican boundary line. Some of these birds, however, make their nests on isolated rocks and cliffs along the entire coast. On Santa Barbara Island there are great numbers of eggs laid; but fewer than formerly, on account of the depredations of the sealers and eggers, who rob these birds so often that few are able to hatch out any young, and then only very late in the season, or after the middle of June, although they begin to lay about the first of May — the time varying, however, considerably with the season and the locality. At the Farallones, in 1863, this species began to lay about the 6th of May; and in 1864, May 13, as Dr. Cooper was informed by Mr. Tasker, the keeper of the lighthouse.

The nest is constructed of pliable stalks of seaweeds and other vegetation, neatly matted together around a slight depression scooped in the ground. The eggs are two or three in number, and are described by Dr. Cooper as having in some instances a ground of pale gray, and in others an olive-brown hue, thickly blotched with dark brown of two shades, or of black. They measure from 2.70 to 2.90 inches in length, and from 1.80 to 2.00 in breadth. For about three weeks in May these eggs are carried in large quantities from the Farallones to San Francisco. After this time the Gulls are no longer molested, and only the eggs of the Murre are gathered. During Dr. Cooper's visit there in June he found numerous Gulls sitting, and saw the first eggs hatched on the 28th of that month — probably a month later than they would have been if the birds had not been disturbed. He saw young fledged Gulls at San Pedro as early as July 12 the previous year.

This species builds its nest both on the soft ground and on the bare rocks; but in the latter position the nest is much thicker than if built on the ground. There are certain localities on Santa Barbara Island which this bird prefers, and these are chiefly such as afford a good opportunity to see the approach of danger. There these birds sit in great flocks, the males and females taking turns on the nests; and when an intruder comes near, they all rise with deafening screams, circling round his head and darting toward him, although never daring to strike him, but snapping their bills sharply, and cackling as if in defiance. Their ordinary cry is a loud scream, which has an enlivening sound, and is uttered on all occasions, but especially when they find food; their first impulse apparently being to call their companions before beginning to eat. They are said to swim around the whale and the seal fishing places, and become so impudent as to steal the scraps almost from the try-pot; it is necessary, therefore, to shoot one occasionally as an example — a warning the meaning of which they are very quick to understand, soon appreciating the danger of having a gun pointed at them.

This bird is, in fact, very sagacious and amusing; and its habits often furnished Dr. Cooper with matter for interesting study on the most lifeless and dreary part of the coast. It deserves, in his opinion, to be regarded as the Raven of the sea; and its reputation for stupidity is not merited; although, unlike the Raven, it is not always as cautious and as distrustful of mankind as its safety demands. It is the Raven's superior in generosity and sociability, always sharing its food with its fellows, and congregating harmoniously in large flocks. It is very nearly omnivorous, although it probably never eats grain in an uncooked condition. Its flight is slow, being made by laborious flappings; although in windy weather it sometimes soars to a great height, circling around, and sometimes wandering far inland. This behavior is considered the sure forerunner of a storm.

When this bird depends chiefly upon small marine animals for its food, it feeds principally at low water, both by night and by day, its white eyes apparently enabling it to see at night; as is the case with many other nocturnal marine birds. No sooner does the tide begin to ebb, than hundreds of Gulls that have been dozing for hours on the beach, or, if the weather is calm, floating quietly on the water at a little distance, join the long train of screaming Godwits, Sandpipers, and Curlews flying to the sandbanks, river-shores, and mussel-beds, to feast until the returning tide drives them off. If a Gull finds a hard-shelled clam which it cannot break, it flies to some well-known hard sandbank or rock, and rising, by a circling flight, fifty feet or more, drops the shell. If it is not broken at the first fall, the operation is repeated until successful, the bird each time rising higher, or flying to a harder place, and as the shell falls, descending by short oblique turns to pick it up. Crabs, sea-worms, small fish, and even dead rats, this bird swallows whole, if possible, and its throat can be greatly distended. While resting, and digesting its food, it frequently remains asleep on the sand until floated off by the rising tide. But it is not easily approached if aware that it is being pursued, although at times it flies close to a person or a boat, screaming, and watching for some stray bits of food. It occasionally, but not often, dives for fish, catching them close to the surface like other Gulls; but can usually procure its food by easier modes, such as watching for fish at the edge of the rising tide. It also follows vessels, easily keeping up with the fastest steamers, which flocks of them always accompany, to pick up the scraps thrown overboard. It always keeps itself remarkably clean, and though not a brilliant, is always a beautiful bird.

The eggs of *L. occidentalis* do not differ much either in shape or size from those of *L. argentatus*. Their most common ground-color is a pale clay; but they vary from pearly white to grayish green, pale ash, or even deep brownish clay-color. The markings of the eggs of the former species are more numerous, and of a darker shade than those of the latter.

Larus affinis.

THE SIBERIAN HERRING GULL.

Larus affinis, Reinh. Vid. Med. 1853, 78 (Greenland); Ibis, 1861, 17. — Seebohm & Brown, Ibis, 1876, 452. — Saunders, P. Z. S. 1878, 171.
Larus cachinnans, Meves, Öfv. K. Vetensk. Ak. Förh. 1871, 786 (not of Pallas, 1826).
Larus fuscus, Jerdon, B. India, II. 1864, 830 (not of Linn. 1758).
Larus occidentalis, Hume, Stray Feathers, 1873, 273 (not of Aud. 1839).
Larus Heuglini, Bree, B. Eur. 2d ed. V. 1876, 58.

Hab. Northern part of Palæarctic Region; Greenland.

Sp. Char. Similar in general appearance to *L. occidentalis*, but of quite different proportions, and the bill with the red spot continued, though more faintly, on to the upper mandible. Legs and feet yellow; eyelids orange-red or vermilion at all seasons.

There being, to our knowledge, no example of this species in American collections, and no more satisfactory description being at present accessible to us, we give below a translation of the original description by Dr. Reinhardt: —

"In the year 1851 the Royal Museum received from Nenortalik, in the district of Julianehaab, a remarkable Gull belonging to the *Glaucus* group of Bruch, which probably accidentally strayed to the Greenland coast; it is a full-plumaged bird, which has already the spotted head of the winter dress, but has not entirely completed its shedding, as the first three quills are not yet changed. In its plumage it shows considerable resemblance to *Larus argentatus;* but the back and the wings have a remarkably darker grayish blue color, which is even considerably deeper than in *Larus tridactylus;* besides, the head and throat are more densely and darkly spotted than ever appears to be the case in the first-named species. The quill-feathers resemble in the main those of *L. argentatus;* the first is brownish black[1] in the greatest part of its length, with the exception of a quite little slate-colored area on its inner surface nearest to the root, and ends in a white point two inches[2] long, which again a little before the end of the feather is furnished with a small black cross-band. On the other quill-feather the slate-gray spot is somewhat more extended on the inner surface, and the feather has indeed a white point, but wants a round spot of the same color, which in *L. argentatus* is found on the inner surface of this feather a little in advance of the tip. The remaining quill-feathers also have white points; but the grayish-blue color, which on the other quill-feathers has already begun to show itself also on the outer surface, spreads in these places more and more, until finally, on the sixth quill-feather, the black color is limited to a small cross-band just in front of the white tip. The shoulder-feathers also have white tips. The feet appear to have been of the same color as in *L. argentatus*, and the beak is yellow, with a bright red spot in front of the angle of the lower jaw, and a lighter tint of the same color on the upper jaw in front of the nostrils, which is likewise a continuation of the spot on the lower jaw.

"In size it is considerably smaller than the adult *Larus argentatus*, and agrees in this respect closely with the young of the latter species; but . . . it has the beak considerably larger, higher, and at the same time more powerfully constructed, than is the case in the young *argentatus*.

Total length	520	Mill.	Height of beak at angle of lower jaw	19	Mill.
Length of folded wing	420	"	Tarsus (foot-root)	56	"
Distance from forehead to tip of beak	48	"	Middle toe with claw	56	"
Distance from corner of mouth to tip of beak	74	"			

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[1] "The brownish-black color of the first three quill-feathers is to a great extent only a result of fading, and will in the newly-grown feathers be deeper and purer."

[2] 2.00 Danish inches = about 2.06 English inches. — Translator.

"That this Gull may already be considered a sufficiently established species is not my opinion; but, on the other hand, I could not well avoid designating it by a separate name, — partly because the differences from *L. argentatus* seem to me too great to suppose that it is an accidental variety of one of the races of this species, and partly because it has been impossible for me to refer it with any certainty to any other known Gull. In some respects it resembles Audubon's *L. occidentalis* from the west coast of North America; and I should be inclined to consider it this, did not Audubon expressly say of his species that it is just as large as *L. marinus* ('Orn. Biogr.' V. 320). Bruch, to be sure, attributes ('Journal für Ornithologie,' I. 101) a size to this species which agrees better with the Gull here mentioned; but how can this discrepancy be reconciled with the size of the two examples whose measurements Audubon gives, and on which he has established the species?"

In the "Ibis" for 1878, p. 489, are the following remarks by H. Gätke, on a specimen of this Gull obtained in Heligoland on the 20th of August of that year: —

"The coloration of the back and outer wing-coverts forms an exact middle shade between the slaty black of *L. fuscus* and the light gray of *L. argentatus*. The specimen being in the moult for its winter-dress, the marks on the feathers of the neck appear darker than those of any Gull I know of; in fact these arrow-shaped marks may be termed pure black.

"About the identity of the species no doubt whatever exists, as I have been able to compare the specimen with one of *L. affinis* in my possession, obtained by Dr. Otto Finsch on the Ob during his recent Siberian excursion."

The Siberian Herring Gull claims a place in the fauna of North America as a bird of Greenland — in which place, however, it is presumed to be only a rare and occasional visitor. It was first described by Reinhardt in 1853, from an immature specimen that had straggled to Greenland.

Middendorff met with this species, which he described as a variety of *L. argentatus*, on the southern shores of the Sea of Okotsk. Immature specimens had previously been taken on the Red Sea and on the Beloochistan coast; but the true specific relations of these birds had remained unexplained until they had been proved to belong to this species. The same is true of birds taken by Hume about Kurrachee, which he mistook for *L. occidentalis*.

We know as yet but little of the distinctive habits of this species. Its centre of distribution during the summer appears to be on the Petchora River, while in the winter it wanders to Southern Asia and Northern Africa; but how much farther is not known.

Messrs. Henry Seebohm and J. A. Harvie-Brown met with this species on the Petchora. It arrives in its spring migration at Ust-Zylma about the 11th of May, and breeds on the shores of the delta and the lagoons of the Petchora. Several of its eggs were procured; but these did not differ from those of the Herring Gull. Nearly all the birds met with on the Petchora were in the adult plumage.

Wherever a party of fishermen was stationed there were sure to be plenty of these Gulls. They hovered over the nets as they were being dragged in, and frequently secured the small fish as these attempted to escape.

Mr. Seebohm, in his paper on the Ornithology of Siberia ("Ibis," 1879, p. 162), mentions that they did not find this Gull breeding until after the party had reached latitude 69°. Its geographical distribution, as studied in the Museum of St. Petersburg, appears to show that it breeds in the extreme north of Europe and in Kamtschatka. It has been obtained, in the breeding-season, on Bear Island, south of Solovetsk, in the White Sea, on the Petchora, on the Ob, on the Yenesei, on the Boganida and the Taimyr, near Northeast Cape, and in Kamtschatka. In its spring and autumn migrations it has been found in the Caspian Sea, and at Ayan, in the Sea of Okotsk. Seebohm states that it is described as not being uncommon at St. Michael's, in Alaska; but this requires confirmation.

The eggs were found to vary somewhat in size and color, and were not distinguishable from those of *L. fuscus* or *L. argentatus*. Nor were the notes of this species distinguishable from those of *L. cachinnans* or *L. argentatus*.

Larus argentatus.

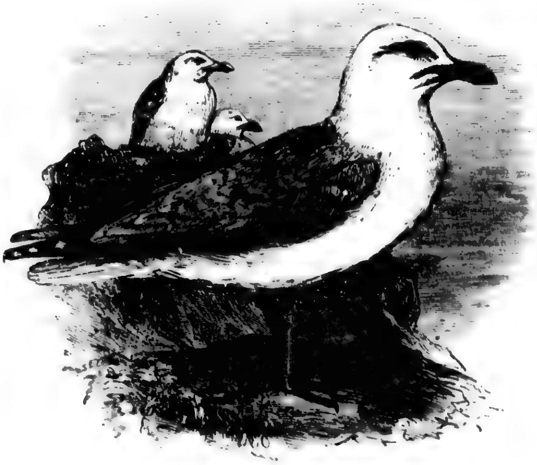
THE HERRING GULL.

a. Argentatus.

Larus cinereus, Briss. Orn. VI. 1760, 160, pl. 14.
Larus argentatus, Brünn. Orn. Bor. 1764, 44. — Gmel. S. N. I. ii. 1788, 600, et Auct. — Saunders, P. Z. S. 1878, 167 (part). — Coues, Check List, 1873, no. 547; 2d ed. 1882, no. 772. — Ridgw. Nom. N. Am. B. 1881, no. 666.
Larus argentatus, a. *argentatus*, Coues, B. N. W. 1874, 625.
Larus marinus, var. *β*, Lath. Ind. Orn. II. 1790, 814.
Larus glaucus, Retz. Fn. Suec. I. 1800, 156 (not of Brünn. 1764).
Larus argenteus, Brehm, Beitr. Vög. III. 1822, 781, 799 (part).
Larus argentatoides, Brehm, t. c. 791, 799 (part).
Laroides major, Brehm, Vög. Deutschl. 1831, 738.
Laroides argentaceus, Brehm, t. c. 742.
? Laroides americanus, Brehm, Vög. Deutschl. 1831, 743.
Goëland à manteau gris, Buff. Hist. Nat. Ois. VIII. 1781, 406, pl. 32; Pl. Enl. 253.

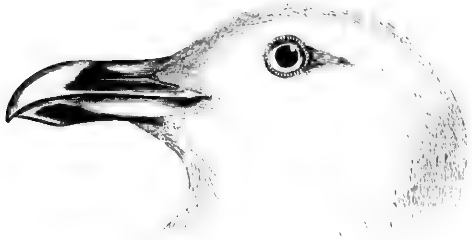
β. Smithsonianus.

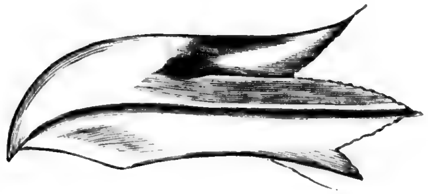
Larus argentatoides, Brehm, Beitr. Vög. III. 1822, 791, 799 (part). — Sw. & Rich. F. B. A. II. 1831, 417 (?).
Larus argentatus, Bonap. Synop. 1828, 360, no. 300. — Nutt. Man. II. 1834, 304. — Aud. Orn. Biog. III. 1835, 588; V. 1839, 638; Synop. 1839, 328; B. Am. VII. 1844, 163, pl. 448. — Lawr. in Baird's B. N. Am. 1858, 844. — Baird, Cat. N. Am. B. 1859, no. 661. — Coues, Key, 1872, 312. — Saunders, P. Z. S. 1878, 167 (part).
Larus Smithsonianus, Coues, Pr. Ac. Nat. Sci. Philad. 1862, 296.
Larus argentatus, var. *Smithsonianus*, Coues, Check List, 1873, no. 547 *b*.
Larus argentatus, b. *Smithsonianus*, Coues, B. N. W. 1874, 625.
Larus argentatus Smithsonianus, Ridgw. Nom. N. Am. B. 1881, no. 666 *a*. — Coues, 2d Check List, 1882, no. 773.



L. argentatus.

Hab. The var. *Smithsonianus*, North America in general, more especially the Atlantic coast, where extending from Labrador to Cuba; breeding from Eastern Maine northward; frequent throughout the interior, on the larger inland waters, and occasional on the Pacific coast. True *L. argentatus*, chiefly Palæarctic, but occasional, or casual, in Eastern North America, though apparently the predominant, if not exclusive, form in the region of Cumberland Sound.





Sp. Char. *Adult, in summer:* Mantle pale pearl-blue (a shade darker than in *L. glaucescens*), the secondaries and tertials passing terminally into white. Outer primary black, more slaty basally, the tip white, and a large white spot across the inner, and sometimes the outer, web; next quill black, tipped with white, and usually without any white except the apical spot; third, fourth, and fifth quills similar, but the basal half or more light pearl-gray (this extending farther on the inner web), the line of demarcation sharply defined; sixth quill light pearl-gray, broadly tipped with white, this preceded by a broad subterminal space of black, widest on the outer web; seventh quill similar, but the black much more restricted, and confined to the outer web; remaining primaries pale pearl-gray, passing gradually into white at ends. Remainder of the plumage snow-white. Bill deep chrome or wax-yellow, with a large spot of bright red near the end of the mandible; eyelids bright yellow; iris silvery white or pale yellow; legs and feet flesh-color, claws brownish black. *Adult, in winter:* Similar, but head and neck, except underneath, streaked with dusky grayish. Bill pale grayish yellow, deepest on anterior half of maxilla, and inclining to flesh-color on basal portion of mandible, except along upper edge; angle of mandible with a large spot of dull orange-red, becoming dusky toward gonys; iris dull light yellow; eyelids dusky yellowish; legs and feet very pale grayish flesh-color. (Fresh colors of a specimen killed at Washington, D. C., Nov. 11, 1880.) *Young, first plumage:* Prevailing color brownish ash, nearly uniform below, the head and neck streaked with white; upper parts variegated by borders to the feathers and irregular spots of pale grayish buff; primary coverts, remiges, and rectrices blackish dusky. Bill dusky black, more brownish basally; iris brown; legs and feet purplish flesh-color in life, brownish in the dried skin. *Downy young:* Grayish white, the lower parts (except throat) immaculate; head marked with irregular spots of black, indefinitely distributed; back, wings, and rump clouded with dusky grayish. Bill black, the end yellowish; feet brownish.[1]

The fresh colors of the European bird (British specimens) are given as follows by Macgillivray ("Hist. Brit. B." V. 546, 551, 552): *Adult male, in winter:* "The bill is pure yellow, the lower mandible with an orange-red patch toward the end; the edges of the eyelids yellow; the iris pale yellow; the feet flesh-colored; the claws brownish black." *Young, in first winter:* "The bill is bluish black, the base of the lower mandible flesh-colored; the iris brown; the feet purplish flesh-colored." *After next moult:* "The bill is dull yellow, with a dusky patch on each mandible, and a little red on the lower; the iris yellow; the feet flesh-colored."

Wing, 16.25–17.50 (average, 17.15) inches; culmen, 1.95–2.50 (2.24); depth of bill through angle, .70–.85 (.80); tarsus, 2.30–2.80 (2.57); middle toe, 1.85–2.25 (2.10). (Twelve adults.)

[1] "Bill brownish black, paler at the base of the lower mandible. Edges of eyelids greenish gray; iris hazel. Feet purplish flesh-color; claws brownish black" (Audubon).

We find, upon the comparison of eleven adult American specimens with four adults of the European Herring Gull,[1] that the differences between the two, as stated by Dr. Coues, are quite constant, particularly as regards size, as may be seen from the following averages of each series: —

American specimens.

	Wing.	Culmen.	Depth of bill.	Tarsus.	Middle toe.
Average,	17.24	2.26	.80	2.57	2.10
Smallest,	17.00	1.95	.70	2.30	1.85
Largest,	17.50	2.50	.85	2.80	2.25

European specimens.

	Wing.	Culmen.	Depth of bill.	Tarsus.	Middle toe.
Average,	16.07	2.05	.76	2.38	2.00
Smallest,	15.75	1.95	.75	2.30	1.90
Largest,	16.25	2.15	.80	2.55	2.15

An adult female from Cumberland Sound (No. 76222; L. KUMLIEN) measures as follows: Wing, 16.25 inches; culmen, 1.95; depth of bill at angle, .75; the dimensions thus agreeing very closely with those of European specimens.

Assuming as one and the same species the Herring Gulls of the Atlantic coasts of Europe and America, we find for this species quite an extended range. The recent discoveries of Mr. Saunders, showing that on the Mediterranean this species is nearly or quite replaced by the *cachinnans;* and the more recent investigations of Mr. Ridgway, proving that the same replacement occurs on our Pacific coast — compel us greatly to diminish the area of distribution once attributed to this bird.

According to Mr. Ridgway, only a single example of this species has been detected on the Pacific shores; this came from British Columbia. Its area of range as given by Mr. Saunders is the northwest of Europe from the Varanger Fiord, the Baltic, and the western coast generally, down to North Africa, the Azores, Madeira, and the Canaries. It is in Greenland a rare straggler, but has been obtained at Winter Islands, near Melville Peninsula; it also occurs in the Hudson's Bay Territory, as far as Mackenzie River, and thence probably to the Pacific coast; since there is a specimen of this bird in the St. Petersburg Museum collected at Kadiak by Wosnessensky. Several specimens from the west coast of Mexico are in Mr. Saunders's collection. It also ranges down the American coast as far as Texas; and even visits Cuba and the Bermudas.

This is a common species in Great Britain, where it remains on the southern coast through the whole year, and in the summer breeds on all the sea-coasts and islands where these are bordered by high cliffs. It is everywhere a bold and familiar bird, fearlessly approaching the boats and nets of the fishermen. It is especially abundant on the islands of the Outer Hebrides, breeding on the coast, but not in the interior. The cliffs of Sumburgh Head — the southern termination of Shetland — is another point where it is very abundant. It is also very numerous in the Orkneys, in the Faröe Islands, and in Iceland. It is resident throughout the year on the coast of Holland and France; and during the winter on that of Spain.

It is one of the most common Gulls on the coast of Scandinavia, even extending its range as far as the North Cape; but it is not known to breed in the southern portion of the country, with the exception of the province of Gotland. The Isle of Sylt, in Denmark, is one of its great breeding-places; and here, according to Kjarbölling, from thirty to forty thousand of their eggs are annually collected for exportation.

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[1] From Denmark, Germany, and the Orkneys.

Mr. Godman mentions finding this species common everywhere about the sea-coast and mountain-lakes of the Azores. It remains there throughout the year, but appears to be more abundant in the summer than in the winter. It breeds about the coast, and particularly on a small island near the southwest point of Fayal, which in June is covered with its nests. Mr. Godman also mentions finding this Gull the most common of its family about Madeira, and in all the islands of the Canary group. According to Mr. Saunders, it is abundant in winter on the coast of Spain, especially outside of the Straits of Gibraltar.

In North America this Gull is found throughout nearly its whole extent, being abundant on the Atlantic side during the winter, and in the summer breeding from Frenchman's Bay, on the coast of Maine, to Labrador. On the interior lakes it breeds from Superior to Slave, and northward of these almost or quite to the Arctic shores. Although Professor Reinhardt regards it as a rare, and even accidental, species in Greenland, it is mentioned by Dr. Walker, of the "Fox," as having been seen by him flying about in abundance at Frederikshaab.

Captain Blakiston received an example of this bird taken at York Factory; and Mr. Murray makes record of others received from Severn House, which is still farther north. Mr. Bernard Ross procured it on the Mackenzie River; and Mr. MacFarlane found it breeding on the Arctic coast between the Mackenzie and the Anderson rivers.

J. Elliot Cabot found it breeding on the shores and among the islands of Lake Superior; and Mr. Giraud has observed it on Lakes Ontario, Erie, Huron, and Michigan, as well as on the larger streams of the interior. It is more or less abundant on all our inland lakes and rivers during its periods of migration. In Southern Wisconsin it is quite common in the spring, arriving, as soon as the ice begins to loosen, along the shores, in the latter part of March. The full-plumaged old birds come first, and the immature ones — which appear to surpass the mature in number — arrive later, some not appearing until the first of June. None remain to breed. In fall they are not so abundant as in the spring.

This species was found breeding in great numbers at Fort Resolution by Mr. Kennicott; at Fort Simpson by Mr. B. R. Ross; at Fort Rae by Mr. Clarke; on Big Island by Mr. Reid; at Lake Winnipeg by Mr. Gunn; on islands in the Lower Anderson River, in June, 1863, by Mr. MacFarlane; also at Horton River and at Fort Anderson by the same; and at Fort Simpson by Rev. Dr. Kirkby.

Dr. Berlandier, of Matamoras, in his manuscript Notes of the Birds of the Lower Rio Grande, states that this Gull during the winter inhabits the marshes on the eastern coast of Mexico, but that it is seldom found in the swampy localities produced by the overflowing of the Rio Bravo del Norte in the vicinity of Matamoras.

The Herring Gull has been given by Mr. Bischoff as occurring at Plover Bay, in Eastern Siberia; by Mr. Bannister at St. Michael's; and is said by Mr. Dall to have been found on the Upper Yukon. But this last statement is an error, the species found having been *Larus cachinnans*, which replaces this bird on the Pacific coast. Only a single individual is recorded from British Columbia.

On Long Island this bird is common in the winter months from November to March, and resorts at low water, with the other species, to the bars and shoals, congregating in such large numbers as to line the shore for a considerable distance. At the influx of the tide it passes most of its time in the air, flying around in wide circles, and at times rising to a very great height. At other times it is observed to follow the shoals of fry, on which it depends for the greater portion of its support. It is incapable of diving, and can only secure its prey when this is near the surface of the water, in doing which it immerses only its head and neck. Major Wedderburn mentions the taking of a number of examples in Bermuda, Feb. 23, 1848.

Richardson states that this species — called by him *argentoides* — breeds on Melville Peninsula. He describes the eggs as having an oil-green color, and being marked with spots and blotches of blackish brown and subdued purplish gray. This bird is noted at Hudson's Bay for robbing the nets set in the fresh-water lakes.

In the summers of 1850 and 1851, spending several weeks on Grand Menan, in the Bay of Fundy — a locality visited by Audubon in May, 1833 — I found this species more or less abundant, and breeding on the ground on most of the uninhabited islands, and on the largest one breeding on the high, inaccessible cliffs, or very generally constructing nests high up in tall and almost inaccessible spruce-trees. Audubon was informed by Mr. Frankland, who lived on Whitehead — a part of Grand Menan, but insulated at high tide — that the remarkable habit of these birds of constructing their nests in trees had been acquired by them within his recollection; and that when he first settled there — many years before — these birds all built their nests on the moss of the open ground. They were induced thus to conceal their eggs and young in consequence of the depredations committed upon their nests; and they gradually began to put these on the trees in the thickest part of the woods. At the time I visited these islands an attempt had been made to arrest or limit these depredations; and persons were prohibited by the proprietors from taking any eggs after the 20th of June. The sparseness of the population, however, and the distance of most of these resorts from the oversight of those interested in enforcing these rules, rendered them almost inoperative.

A nest of one of this species, built near the top of a tall spruce, and at least sixty feet above the ground, was brought to me with its contents. It was composed entirely of long, fine, flexible grasses, evidently gathered, when green, from the salt marshes, and carefully woven into a circular fabric. Taking into consideration the clumsy web-feet and the hardly less unwieldy bill of the bird, it was certainly a remarkable structure. The materials were strongly interwoven and compacted, and the nest could be handled without coming to pieces; indeed it had been thrown to me from a height of fifty or sixty feet, and remained uninjured. It contained three eggs, nearly fresh, whose large size indicated that the parent bird was very old. The nest measured about eighteen inches in diameter, its sides being three or four inches thick, and its cavity at the centre at least four inches deep. The bird remained upon her eggs until she had been nearly reached, and flew over our heads, screaming, when we were despoiling her of her treasures.

The nests found upon the ground varied exceedingly, some being merely a shallow depression with a slight lining, and others large, and elaborately built of mosses and fine bent. The eggs were never more than three in number; and when there were less, they were almost invariably fresh. The Gulls were shy; and without exception flew from their nests on the ground on our approach while we were still at a distance from them. Several years later I found these Gulls very abundant on all the rocky islands and among the high cliffs of the upper parts of the Bay of Fundy, on the Isle of Hant, at Cape Split, and at Porsboro. In almost all cases they were in inaccessible places, where they must have been in nearly complete security. In such situations and in their nests in trees the young remain until they can fly. Those that hatch on the ground leave their nests to hide in the crevices of rocks and under any other convenient shelter, and resort to the water long before they can fly.

Mr. R. Kennicott found this species breeding on the southern shores of Great

Slave Lake. The nests were in great numbers and close together, on a point of a large wooded island, and are said to have been made, with considerable art, of sticks, leaves, and feathers; not being placed in unsheltered positions, but generally hidden among low bushes or beside drift-logs, and often under willows. The nests were deep and large.

Dr. Bryant mentions finding the Herring Gull, in 1860, one of the most common birds on the coast of Labrador, where it was breeding on nearly all the grassy islands; and he was assured by the inhabitants that it had always been abundant there. He visited thirty of its breeding-places between Romaine and Château Beau, at all of which there were also Black-backed Gulls in greater or less abundance. As the eggs and young are both favorite articles of food, the birds are much harassed by the inhabitants. The eggs were found to be subject to greater variations in form and color than those of most of the species of this genus. The large spots, which form so marked a feature in the eggs of the *marinus,* were seldom seen. He gives the measurement of four typical specimens as follows: 2.73 inches by 1.64; 2.84 by 1.83; 2.05 by 1.79; 2.91 by 1.94.

In the various examples of the eggs of this species which I have examined, the ground-color has been found to vary from a pearly-white, or a pale drab, or a grayish green, to a brownish clay-color. The markings are more usually of a violet-gray, blended with the more conspicuous blotches of a deep sepia-brown.

Larus cachinnans.

PALLAS'S HERRING GULL.

Larus cachinnans, PALL. Zoog. Rosso-As. II. 1826, 318. — SAUNDERS, P. Z. S. 1878, 119.
Larus argentatus, AUCT. ex Siberia (part).
Larus (*Glaucus*) *leucophæus,* "LICHT." BRUCH, J. f. O. 1853, 101 (Red Sea).
Larus leucophæus, SHARPE & DRESSER, Birds Eur. Pt. XXII. 1873.
Larus (*Glaucus*) *Michahellesii,* BRUCH, l. c.
Larus (*Glaucus*) *borealis,* "BRANDT," BRUCH, l. c.
Larus borealis, DALL & BANNIST. Tr. Chicago Acad. I. 1869, 305 (St. Michael's, Alaska). — BAIRD, l. c.
Larus argentatus d. *borealis,* COUES, B. N. W. 1874, 626.
Larus epargyrus, LICHT. Nomencl. 1854, 99.
Larus fuscescens, "LICHT." BRUCH, J. f. O. 1853, 100 (part).

HAB. Northern Asia, from the Red Sea, Kashmir, etc., to Kamtschatka and the Arctic Ocean; coast of Alaska (common at St. Michael's, DALL & BANNISTER, l. c.), and south, in winter, to California.

SP. CHAR. Similar to *L. californicus,* but larger, the bill more robust, without the black spots, and the feet yellow (SAUNDERS). *Adult, in summer:* Mantle deep cinereous-blue, precisely as in *L. californicus,* the secondaries and tertials broadly and abruptly tipped with white. Outer primary brownish black, the terminal portion, for the space of about 2.25 inches, white, marked by a subterminal spot or broad bar of black;[1] second quill brownish black, tipped with white, the inner web marked near the end by a large oval spot of white; third, similar, but becoming bluish gray basally, the tip only white, the inner web paler gray than the outer, becoming lighter terminally, where sharply defined against the black, and reaching to within about 2.50–2.75 inches of the end of the feather; fourth similar, but the black more restricted, the inner web decidedly white posteriorly, next the black; fifth similar, with the black still more restricted, the gray of the outer web lighter; sixth quill pale grayish blue, passing into white terminally, crossed near the end by a broad bar or band of black; seventh similar, but with the black band incomplete or scarcely indicated; rest of the quills pale grayish blue, passing gradually into white on ends.

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[1] In some specimens the white tip is worn off, thus causing the black to appear terminal.

Remainder of the plumage pure white. Bill deep chrome-yellow, the mandible red subterminally, near the angle; eyelids orange-red (Saunders); legs and feet yellow (Saunders); iris pale yellow. *Adult, in winter:* Similar, but head and neck, above and posteriorly, streaked with brownish gray.[1] *Young:* "The young have always flesh-colored legs, and cannot possibly, I believe, be distinguished from the young of *L. argentatus*" (Giglioli, "Ibis," 1881, p. 219).

Total length, about 26.00 inches; wing, 15.15–18.30 (average 16.39); culmen, 1.90–2.20 (2.05); depth of bill through angle, .60–.80 (.72); tarsus, 2.15–2.50 (2.41); middle toe, 1.60–2.15 (1.95). [Six adults.]

This easily recognized species more nearly resembles, except in size, *L. californicus* than *L. argentatus*, with which it has generally been compared, the color of the mantle being precisely similar, while the eyelids are red, as in that species, and not yellow, as in *argentatus*. The bill, however, is similar in shape, size, and color to that of *argentatus*, being destitute of the black spots always present in *californicus*. The feet are stated to be yellow (cf. Saunders, P. Z. S., 1878, p. 170), while those of *californicus* are pea-green, and those of *argentatus* flesh-colored. It would be interesting to know the color of the iris in this species, since its true relationship might thus be more easily determined. *L. argentatus* and *L. californicus* are very different in this respect, the former having pale yellow or silvery-white, the latter dark brown, irides.

This species has been only quite recently ascertained by Mr. Ridgway to be the common Gull of the Northern Pacific coast from San Francisco northward to Alaska. While closely resembling the *argentatus*, Mr. Howard Saunders thinks that it may properly be considered as being distinct from that bird. Owing to the great confusion that has existed in regard to the identity of this species, very little can be given with certainty descriptive of its specific peculiarity of habits; and even its area of distribution must remain for the present largely conjectural. Mr. Saunders, who was not then aware of its presence on our Pacific coast, mentions it as straggling up the French coast as far north as Havre, as replacing the *argentatus* in the Mediterranean, ranging throughout that inland sea, and breeding on its shores and islands; thence it extends up the Black Sea, across the steppes and low-lying marshy and salt-lake districts of Russia, from the mouths of the Volga and the shores of the Caspian as far as Vologola; across the Ural River and the Kirgish steppes to the Irtich, and as far as Lake Baikal. It goes down the Red Sea; and in winter visits the Persian Gulf and the Mekran coast as far as Kurrachee. It is also found at that season along the coasts of China and Japan; and is the species recorded under the names of *L. cachinnans* and *L. occidentalis* by Swinhoe — who, however, did not meet with the true *occidentalis*, which has never been obtained on the Asiatic shore. All the notes we have which can properly be referred to this species as existing on our own coasts have been given under the supposition that the species spoken of were the *argentatus*. Both Mr. Bischoff and Mr. Dall refer to what is presumed to have been this bird as occurring at Plover Bay, in Eastern Siberia; and he also met with it on the Upper Yukon, where he found it replacing the *leucopterus* of the Lower Yukon. It arrives in that region about the 2d of May, breeds on the islands of that river, where he obtained examples of its eggs. These were laid on the bare ground in slight depressions.

According to Dr. Cooper's observations, this species is not so common on the Pacific coast as is the *argentatus* on that of the Atlantic. It occurs in considerable numbers about the large rivers and lakes of the interior of California, and is not uncommon in the winter on the coast. In the severe winter of 1861–1862 Dr. Cooper found it nearly as abundant about San Diego as *L. occidentalis.* He speaks of its habits as being very similar to those of that species; but adds that its screams are not nearly so loud, its voice seeming to be rather faint for so large a bird. It entirely disappears from the Pacific coast during the summer.

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[1] According to Professor Giglioli (cf. "Ibis," April, 1881, p. 219), "the adults in all seasons have the head and neck pure white, without any trace of brown specks, and the legs and feet of a bright yellow." Specimens in the National Museum, however, from Japan and the Pacific coast of North America, are marked as described above.

Larus californicus.

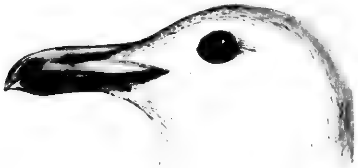
THE CALIFORNIA GULL.

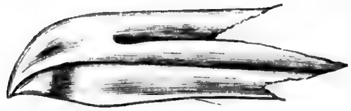
Larus californicus, Lawr. Ann. Lyc. N. Y. VI. 1854, 79; in Baird's B. N. Am. 1858, 846. — Baird, Cat. N. Am. B. 1859, no. 663. — Coues, B. N. W. 1874, 634; 2d Check List, 1882, no. 777. — Saunders, P. Z. S. 1878, 175. — Ridgw. Nom. N. Am. B. 1881, no. 668.

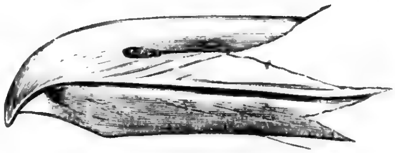
Larus delawarensis, var. *californicus*, Coues, Key, 1872, 313; Check List, 1873, no. 548 *a*.

Hab. Western Province of North America; abundant on the larger inland waters as well as on the coast; north to Alaska, south to Rio de Coahuyana, Western Mexico.

Sp. Char. Slightly smaller than *L. occidentalis,* with much weaker bill and lighter mantle. *Adult, in summer:* Mantle deep bluish cinereous, intermediate in shade between the plumbeous of *occidentalis* and the pearl-blue of *argentatus,*[1] the secondaries and tertials broadly (for about one inch) tipped with white. Outer primary black, its terminal portion white for about two inches, with or without a black subterminal spot; second quill also black, the tip white, and usually (though not always) marked by a white spot (sometimes one inch long) near the end; third quill black, tipped with white, the base plumbeous; fourth, with the basal half plumbeous-blue, the terminal half black, tipped with white; fifth similar, but the black more restricted, and the line of demarcation between the black and blue still more sharply defined; sixth, lighter plumbeous-blue, passing into white toward the end, and crossed by a wide subterminal band of black; remaining quills cinereous-blue, broadly tipped with white. Remainder of the plumage snow-white. Bill yellow, varying from greenish-lemon to chrome, the terminal third of the mandible bright red (varying from orange-red to carmine), the tip again yellow; a more or less distinct dusky spot in or immediately in front of the red, and one directly above it on the maxilla, the tip of which is sometimes grayish white; rictus and eyelids vermilion red; *iris dark hazel or vandyke-brown; legs and feet pale pea-green, sometimes tinged with grayish.*[2] *Adult, in winter:* Similar, but head and neck (except underneath) broadly streaked with grayish brown. *Young, first plumage:* Above, coarsely spotted, in nearly







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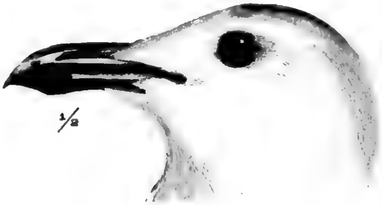
[1] Exactly as in *L. cachinnans*, Pallas!

[2] Notes from upward of fifty freshly-killed specimens! (Cf. Ridgway, "Orn. Fortieth Par." 1877, p. 637.)

equal quantities, with brownish slate and grayish buffy white, the latter bordering the feathers, and forming broad irregular bars, mostly beneath the surface; primary coverts, remiges, and rectrices dusky black, the inner primaries more grayish, the primary-coverts narrowly tipped with white and the outer tail-feathers with irregular broken bars of the same. Head, neck, and lower parts mottled or clouded with grayish white and brownish gray, the latter prevailing on the head and neck — nearly uniform on the nape. Bill dusky, black at the tip and brownish basally; iris brown; legs and feet brownish (in the dried skin). *Downy young:* Grayish white, purer white centrally beneath, where immaculate; head marked by irregular dusky black spots, of indefinite arrangement, but most numerous above; upper parts clouded with dusky grayish. Bill black, tipped with pale yellowish brown.



Total length, 21.50 to 23.00 inches; extent, 51.00 to 55.00 inches; wing, 15.00–16.75 (average, 15.54); culmen, 1.65–2.15 (1.83); depth of bill through angle, .60–.75 (.64); tarsus, 2.00–2.60 (2.25); middle toe, 1.70–1.95 (1.88). [Fifteen adults.]

The salient points distinguishing this well-marked species from others occurring in the same regions consist in the peculiar shade of the mantle, which is a deep cinereous-blue, intermediate between the plumbeous of *occidentalis* and the pearl-blue of *argentatus*, and exactly as in *L. cachinnans*, PALLAS, of the Palæarctic Region and Northwestern America; the red mandibular spot of *argentatus*, etc., combined with a more or less complete black band near the end of the bill, as in *delawarensis*, although there is rarely, if ever, a complete band, as in the latter species. The dark-brown irides and pea-green feet of the perfect adult distinguish it at once from all its allies, which, except *L. occidentalis*,[1] have, when adult, yellow or whitish irides and flesh-colored feet.

As in other species of this group, the white *picturæ* of the primaries increase in size with the age of the bird; as coincident with this change, it may be mentioned that in the older individuals the black spots of the bill are sometimes almost obsolete, being most distinct in younger specimens.

This is an exclusively northwestern and northern species, and is found on the Pacific coast in the winter; but retires to its breeding-places in the summer. Mr. Bernard Ross claims to have met with it on the Mackenzie River. Dr. Cooper writes that he found this Gull not rare on the Pacific coast in the neighborhood of San Diego during the winter; and he also states that it winters along the entire coast as far north as Puget's Sound; but that it retires in the summer to its breeding-places in more northern regions. He describes this species as being less vigorous in flight than *L. occidentalis*, more inclined to dive for fish, and not so varied in its mode of obtaining its subsistence. He thinks it probable that this species is one of those Gulls which breed on Mono Lake and on other salt bodies of water in the interior basin.

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[1] *L. occidentalis* has brown irides, and yellow, though, according to the labels of some collectors, flesh-colored feet!

Captain Bendire mentions finding this a very common species on Lake Malheur, in Eastern Oregon, where it breeds abundantly.

Mr. Ridgway found it in large numbers on Pyramid Lake, as well as on Great Salt Lake. It nested in immense numbers upon the islands in both of these lakes, and fed chiefly about the mouths of the streams flowing into them — often ascending the large rivers for some distance. The birds were found there only in summer, during which season no other species of Gull was seen in the same localities; while in winter this species was entirely replaced by *L. delawarensis*. In Great Salt Lake it nested almost, if not quite, exclusively on Carrington Island; and in Pyramid Lake, on the main island. It was on the latter that Mr. Ridgway became best acquainted with the species; for during his several visits in the month of May, 1868, he found it exceedingly abundant on the northwest side, which was occupied by this Gull as its breeding-ground. An area of several acres was thickly crowded with the nests, which were mere heaps of dirt and gravel, mingled with rubbish of sticks, bones, and feathers, raised a few inches above the surface, and with a slight depression on the top. By far the larger number of these nests were placed upon rocks; but some on the tops of stunted sage or on greasewood bushes.

The eggs were from one to five in number, but usually three or four. When the nesting-ground was invaded, the Gulls flew reluctantly from their nests — some circling about overhead, and others perching upon the ledges of rock, all uttering deafening cries. The eggs were used for food during the stay of the party at the lake, and were highly esteemed by all, being very rich, and entirely free from the disagreeable musky odor and toughness of the eggs of some Geese and Ducks.

This colony of Gulls was a great pest to the Pelicans, and their eggs had been twice destroyed by the latter during the season.

In the collection of the Smithsonian Institution are numerous examples of the eggs of this species from the neighborhood of Great Slave Lake. Specimens of the birds and eggs were secured near Fort Resolution by Mr. Kennicott, and also by Mr. Mackenzie; and others were taken by Mr. B. Ross at Fort Simpson, and at Big Island by Mr. J. Reid. These Gulls were also found breeding on the Lower Anderson River by Mr. MacFarlane.

Six eggs (Smithsonian Collection, No. 4226), collected by Mr. Ridgway at Pyramid Lake, present the following variations in their measurement: 2.50 inches by 1.90; 2.55 by 1.65; 2.60 by 1.95; 2.65 by 1.85; and 2.70 by 1.75. The ground-colors of these eggs vary from a bluish white, without any markings whatever, to a deep brownish clay-color, with numerous spots of brownish slate and dark clove-brown. In a few examples the subdued spots of lilac and slate predominate; in others they are overlain with the darker brown: some of these are in blotches, others are in zigzag lines.

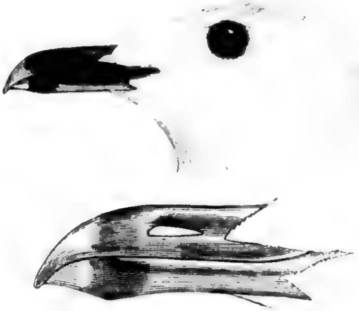
Larus delawarensis.

THE RING-BILLED GULL.

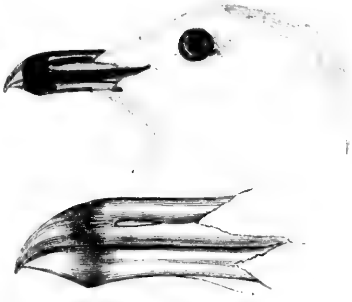
Larus delawarensis, Ord, Guthrie's Geog. 2d Am. ed. 1815, 319. — Lawr. in Baird's B. N. Am. 1858, 846. — Baird, Cat. N. Am. B. 1859, no. 664. — Coues, Key, 1872, 313; Check List, 1873, no. 548; 2d ed. 1882, no. 778; B. N. W. 1874, 636. — Saunders, P. Z. S. 1878, 176. — Ridgw. Nom. N. Am. B. 1881, no. 669.
Larus canus, Bonap. Specc. Comp. 1827, 69 (not of Linn. 1758).
? *Larus argentatoides*, "Brehm," Bonap. Synop. 1828, 360 (not of Brehm, 1822).
Larus zonorhynchus, Richardson, F. B. A. II. 1831, 421. — Aud. Orn. Biog. III. 1835, 98; V. 1839, 638, pl. 212; Synop. 1839, 327; B. Am. VII. 1844, 152, pl. 446.
Gavina Bruchii, Bonap. Naum. IV. 1854, 212.
Larus zonorhynchus, var. *mexicanus*, Bonap. Consp. II. 1857, 224.

HAB. The whole of North America; south (in winter) to Mexico and Cuba.

SP. CHAR. Smaller than *L. californicus*, the bill more slender, and without red spot, the mantle much paler, the iris yellow, and feet greenish yellow in the adult. *Adult, in summer:* Mantle pale pearl-blue (much as in *L. argentatus*, much paler than in *L. brachyrhynchus* or *L. canus*), the secondaries and tertials passing terminally into pure white. Outer primary black, with a white space 1.25 to 1.50 inches long near the end, involving both webs, the shaft, however, black; second quill similar, but with the white space smaller, and the extreme tip also white; third, with the basal half pale pearl-gray, and the apical white spot larger; next, similar, but the subterminal black more restricted, the line of demarcation between it and the pale pearl-gray still more sharply defined; fifth, pale pearl-gray, passing terminally into white, but crossed near the end by a wide band of black, about .75 of an inch wide; sixth quill pale pearl-gray, passing into white terminally, and marked near the end by a more or less imperfect black spot; remaining quills pale pearl-blue, passing terminally into white, and without a trace of black. Bill greenish yellow, crossed near the end by a blackish band, the tip sometimes tinged with orange; rictus and eyelids vermilion-red; interior of mouth rich orange-red, more intense posteriorly; iris clear pale yellow; feet pale yellow, sometimes tinged with greenish; claws black.[1] *Adult, in winter:* Similar, but the head and neck, except beneath, streaked with brownish gray. *Young, first plumage:* Above, brownish dusky, the feathers bordered with pale grayish buff; primaries blackish dusky, the inner quills bluish gray basally, and tipped with white; secondaries bluish gray on basal half, dusky black terminally where edged with white; basal two thirds of the tail pale gray, more whitish basally, mottled with deeper grayish; terminal third dusky black, narrowly tipped with white. Lower parts white, spotted laterally with grayish brown. "Bill black, base of lower mandible and edges of the upper toward the base, livid flesh-color; edges of eyelids livid blue; iris hazel; feet purplish gray, claws brownish black" (AUDUBON).



Larger form (= *Bruchi*, Bp?.)



Adult, in summer.

Wing, 13.60–15.75 (average, 14.45) inches; culmen, 1.55–1.75 (1.64); depth of bill through angle, .50–.65 (.56); tarsus, 1.90–2.45 (2.14); middle toe, 1.30–1.60 (1.46). [Sixteen adults.]

This species appears to be found nearly throughout North America, though quite irregularly. It breeds in high northern latitudes, on the coast of Labrador, and in the interior; it occurs in winter both on the Atlantic and on the Pacific coast, on the latter as far to the south as Mazatlan, and in the interior as far to the north in summer as Lake Winnipeg.

Sir John Richardson refers to it as *Larus canus*, and also as *L. zonorhynchus*. In speaking of it under the former name, he states that it breeds in Arctic America, but that it retires to the south when winter sets in; referring to it as *zonorhynchus*, he adds that he found it breeding in considerable numbers in swampy places on the banks of the Saskatchewan. Captain Blakiston also mentions meeting with it on the lower portions of the Saskatchewan.

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[1] "*Adult male, in summer:* Bill marked opposite the angle with a broad transverse band of brownish black, between which and the base it is light greenish yellow, the tips orange-yellow. Edges of eyelids greenish yellow; iris bright yellow. Feet greenish yellow, the webs tinged with orange, claws black" (AUDUBON).

Colonel Grayson states that he found this species common during the winter months in the neighborhood of Mazatlan.

It breeds on the northern coast of Labrador, and in the summer of 1850 I obtained in Halifax specimens of the birds and eggs that had been procured the previous summer in the neighborhood of Cape Harrison. This bird is said to be not at all shy, and to permit a near approach. Dr. Bryant did not meet with it either on the Gannet Rocks, in the St. Lawrence, where Audubon states that he found it breeding, or in Labrador. On the latter coast, on the 18th of July, on a low rocky island near the harbor of Little Macatina, Audubon found a large colony of these birds breeding. All the eggs contained chicks in a more or less advanced condition. The number of eggs in each nest was generally three, and they were said to resemble those of the *marinus* in form and color, and to measure 2.75 inches in length by 1.68 in breadth. There was considerable diversity both in the tint of their ground-color and in the number and size of their spots. Generally they were of a dull dark cream-color, thickly blotched, and sprinkled with different shades of purple, umber, and black. The nests, formed of seaweed, were all placed on the bare rock, were well constructed, and were about twelve inches in their greatest diameter. The whole place had the appearance of having been resorted to for several years in succession. The birds were very shy.

Mr. Boardman informs me that this species is quite common both in spring and fall in Passamaquoddy Bay, and also in the Bay of Fundy; but he thinks that it does not breed in that neighborhood now, whatever may have been the case when Audubon visited Eastport. It is common in the winter along the Atlantic coast as far south as Maryland at least, and probably immature birds wander still farther.

It is of occasional occurrence in Bermuda, where Major Wedderburn speaks of it as rare, one specimen only, so far as he knew, having been met with there, in January, 1849. It is, according to Giraud, common off the coast of Long Island throughout the winter, from November to April.

In its migrations, both in the spring and fall, this species appears to be more or less abundant in the valley of the Mississippi, and also farther west. It is of frequent occurrence throughout Colorado, especially in the spring. Professor Frank H. Snow, of the Lawrence (Kan.) University, obtained a specimen near that city, April 2, 1872. Professor Kumlien writes me that this Gull is common about Lake Koskonong, in Southern Wisconsin, where it is found in much larger flocks than the *argentatus*. Immature birds are often seen in small flocks of from eight to twenty in the lake in June; and occasionally a few have been noticed there all summer. They are not known to breed there; although once on the sandy shore the fragment of an egg was found which may have belonged to this species, as it was very much like the egg of *Larus canus* of Europe. This Gull arrives later than *argentatus*, about the middle or latter part of April, and remains as late in the fall as November 7.

Mr. J. A. Allen states that he found this species, or its western representative, a common summer resident in Salt Lake Valley; it was breeding on the islands in great numbers. At the period of his visit these birds spent much of their time on the sandbars of Weber River, and at certain hours of the day rose in the air to feast on the grasshoppers, on which they seemed at this time almost wholly to subsist.

The stomachs of those Gulls that were killed were not only filled with grasshoppers, but some birds had stuffed themselves so full that these could be seen when the birds opened their mouths. And it was a curious fact that the Gulls captured the grasshoppers in the air, and not by walking over the ground, as they have been said to do. Sailing around in broad circles, as though soaring merely for pleasure, the birds seized the flying grasshoppers as easily, if not as gracefully, as a swallow while in rapid flight secures its prey of smaller insects.

Mr. Henshaw regards this Gull as being common throughout Utah on all the larger bodies of water. It was seen in large numbers on Provo River late in November, when the lake was frozen over, and he had no doubt that it was a winter resident there.

Dr. Cooper refers to this species as being rare in California, and as visiting the Lower Pacific coast only in winter, and usually in small numbers. He met with a few of these Gulls near San Diego between November and February, but found them common in Puget Sound during the winter. They appeared to subsist almost entirely by fishing; and for this purpose they follow the rivers far into the interior. At San Diego neither this species nor the *californicus* was known to feed on dead whales — a diet which formed the chief subsistence of the two larger species, and to some extent of the *argentatus.* Dr. Cooper also met with this species near Lake Tahoe in September.

It was seen by Captain Stansbury during his expedition to Salt Lake, April 9; and he mentions in his Journal that while rounding the northern point of Antelope Island he came upon a rocky islet covered with innumerable flocks of Gulls which had congregated there to build their nests. It is also mentioned by Captain Bendire as being a summer resident of Eastern Oregon, and as breeding there abundantly.

Four eggs in my collection — two from Labrador, and two from Great Slave Lake — present the following measurements: 2.20 by 1.60 inches; 2.20 by 1.65; 2.23 by 1.60; 2.40 by 1.60. Their ground-color varies from a pale grayish green to a deep drab. These are spotted, in varying proportions, but chiefly about the larger end, with subdued markings of lilac and slate, and larger blotches of a dark clove-brown.

Larus brachyrhynchus.

THE SHORT-BILLED GULL.

Larus canus, RICH. F. B. A. II. 1831, 420 (= adult; not of LINN. 1758). — NUTT. Man. II. 1834, 301.

Larus brachyrhynchus, RICH. F. B. A. II. 1831, 421 (= young). — NUTT. Man. II. 1834, 301. — COUES, Pr. Ac. Nat. Sci. Philad. 1862, 302; 2d Check List, 1882, no. 780. — ELLIOT, Illustr. Am. B. II. pl. 53. — RIDGW. Nom. N. Am. B. 1881, no. 670.

Larus canus, var. *brachyrhynchus*, COUES, Key, 1872, 313; Check List, 1873, no. 549; B. N. W. 1874, 639.

Larus Suckleyi, LAWR. Ann. Lyc. N. Y. 1854, 264 (= young); in Baird's B. N. Am. 1858, 847. — BAIRD, Cat. N. Am. B. 1859, no. 665.

Rissa septentrionalis, LAWR. Ann. Lyc. N. Y. 1854, 266 (= adult); in Baird's B. N. Am. 1858, 854. — BAIRD, Cat. N. Am. B. 1859, no. 673.

HAB. The interior of Arctic America, and Pacific coast, south to Washington Territory.

SP. CHAR. Similar to *L. canus*, but bill proportionally shorter and deeper, middle toe longer in proportion to the tarsus, and pattern of the primaries quite different. Size small (wing about 14.00 inches); bill small, the culmen about as long as the middle toe, which is much shorter than the tarsus. *Adult, in summer:* Mantle light pearl-blue, the shade *averaging* exactly as in *L. canus*,[1] the secondaries and tertials broadly (the former rather abruptly) tipped with white.

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[1] On this point cf. Howard Saunders, P. Z. S., 1878, p. 179.

Outer primary slate-black, about 2.50 inches of the subterminal portion (including the shaft) white, the tip again black; inner web more slaty than the outer, the basal half sometimes ashy white, minutely freckled with darker, but usually uniform slaty gray, paler basally; second quill with the basal half of the outer web and much more of the inner pale bluish gray (much like the mantle), a large space of white, about 1.75 inches in extent, near the end, the intervening space black, abruptly contrasted with the basal pale bluish gray; a small apical spot of white, preceded by a broad subterminal one of black, about .70 of an inch in length; third quill tipped with white, the subterminal portion black for about 1.00 inch on the inner, and more than 2.00 inches on the outer web (next the shaft), the remaining portion pale grayish blue, becoming nearly or quite white on the inner web where adjoining the black; fourth quill similar, but the black more restricted, and the outer web becoming white posteriorly; fifth, similar, but with the black space more restricted, forming a subterminal band about .75 of an inch wide, the white preceding it still more extensive than on the fourth quill; sixth with a still narrower black band (seldom more, generally less, than .50 of an inch wide); remaining quills pale pearl-blue, passing gradually, but broadly, into white, terminally, the seventh sometimes with a small black bar near the end of the outer web. Rest of the plumage snow-white. "Bill bluish green, its terminal third bright yellow; legs and feet dusky bluish green, the webs yellowish" (Coues).[1] *Adult, in winter:* Similar, but the head and neck, sometimes also the jugulum, longitudinally spotted with light grayish brown. *Nearly adult:* Similar, but the white of the primaries more restricted and the black more extended, the latter color more brownish; quills without white apical spots; bill more or less dusky terminally; tail sometimes (in younger individuals) more or less blotched with dusky terminally, and upper tail-coverts sometimes (rarely) faintly barred with grayish brown. Head, etc., spotted or immaculate, according to the season. *Young, first plumage:* Above, grayish brown, the feathers widely and distinctly bordered with pale grayish buff; rump and upper tail-coverts grayish buffy white, marked more or less distinctly with irregularly sagittate spots of grayish brown; basal half of the tail grayish white or pale grayish, transversely mottled with darker; terminal portion dusky grayish brown, forming a well-defined broad zone, the tip whitish. Head, neck, and lower parts nearly uniform light brownish gray. Primaries uniform dusky grayish brown, the terminal margin paler. Bill dusky, more brownish at base; feet (in skin) light brown. *Older:* Similar, but the light borders to the feathers of back, etc., purer white; basal half of the tail uniform bluish white; lower parts white, the breast and sides spotted with light grayish brown; basal half (or less) of the bill light colored. Upper parts more or less tinged with the pale blue of the adult plumage.

Total length, about 17.50 to 18.00 inches; extent 43; wing, 13.20–14.50 (average, 13.93); culmen, 1.25–1.70 (1.45); depth of bill, .40–.50 (.45); tarsus, 1.70–2.10 (1.94); middle toe, 1.30–1.55 (1.44). [Twenty-six adults.]

This species, while agreeing closely with *L. canus* in size and general appearance, may be very easily distinguished when adult by the dissimilar pattern of the primaries, and the somewhat different proportions, as shown in the diagnosis on p. 210. In many specimens (chiefly younger individuals), the dark portion of the primaries is dusky brownish, instead of black. In one (No. 70299, St. Michael's, Alaska; L. M. Turner), a perfectly adult, though probably not a very old, bird, this color is quite a light grayish brown, as though the color had been washed out, the pattern being the same as in most adult specimens.

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[1] "*Adult, high breeding-plumage:* Eyelids, ocular region, and gape of mouth, bright orange-yellow, which color extends over the tip and cutting edges of the bill; the green of the bill with a peculiar hoary glaucescence. Legs and feet bluish green, the webs bright gamboge-yellow" (Coues).

Adult male (No. 70299, U. S. Nat. Mus., St. Michael's, Alaska, May 31, 1875): "Iris dark hazel; bill, feet, and toes dark greenish yellow, webs yellowish; eyelids crimson" (L. M. Turner, MS.).

Sir John Richardson first refers to this bird as a distinct species on the strength of an individual obtained at Great Bear Lake. This example was a female that had been killed on the 23d of May, 1826. Mr. Murray states that he met with this species on Hudson's Bay; and Mr. Bernard Ross also saw it on the Mackenzie River.

Dr. Cooper mentions having also met with it, during its migrations, near the Columbia River. He found it passing only during the spring and fall; but specimens are said to have been obtained by others near the Straits of Fuca, both in December and in July. He is of opinion that in all probability these birds proceed south only as far as the extreme northern limits of California, and only during the extremity of winter. Dr. Cooper found them in flocks that were constantly fluttering over shoal water, rapidly diving for fish, and keeping up a constant chattering. In their flight their movements were rapid and easy. They were rather shy.

Mr. Bannister found this species abundant on the marshes and ponds along the canal or channel which separates the Island of St. Michael's from the mainland. It was not so abundant on the more open water near the fort.

Mr. Dall speaks of it as being eminently a river Gull, and as abundant from Fort Yukon to the sea; but it was not seen by him on the sea-coast. He states that he obtained its eggs in great abundance about the mouth of the Yukon — where a variety was noticed having a bright yellow bill — and also the young Gulls in their downy plumage near Fort Yukon. The black-and-white pattern on the wings of this species is said to vary a good deal; not so much in itself, as in relation to the different feathers, as if it had been carelessly stamped on with the hand by a die. These birds were eaten by the old Indians.

Mr. MacFarlane found this species breeding at various points, near the Arctic Sea, between the Mackenzie Valley and the Anderson, and from there to the Yukon. One nest, which was merely a small cavity in the sand, and which contained two eggs, was found on Lockhart River on the 28th of May; another was seen, June 3, on the ground near a small lake in the neighborhood of Fort Anderson; and a third, obtained on the 10th of June near Fort Anderson, contained three eggs. This last nest was made of hay, and was placed on a stump, four feet from the ground, near a small lake; the parent bird was secured. A fourth, also containing three eggs, was found on the following day in a precisely similar situation. On the 21st of June a nest of this species, which was built on a tree at least ten feet from the ground, was seen near Rendezvous Lake. It was composed of sticks and twigs, and was lined with mosses and hay. Both parents were near the spot, and the male was secured. Another nest was taken on Swan River, in the Barren Grounds; it also was built on a tree, in the same situation as the last mentioned, and was similar in its construction.

Specimens of this Gull were also secured during the breeding-season on Slave River, at Fort Resolution, and on the Yukon, by Mr. Kennicott; at Big Island by Mr. Reid and by Mr. Ross; at Fort Rae by Mr. Clarke; and at various places by Mr. MacFarlane.

The eggs in the Smithsonian Collection were taken from Great Slave Lake, the Yukon, Anderson River, Fort Rae, Fort Resolution, and Peale's River. Six eggs present the following measurements: 2.00 by 1.45 inches; 2.00 by 1.60; 2.05 by 1.50; 2.25 by 1.70; 2.30 by 1.70; and 2.35 by 1.60. Their ground-color is a greenish olive-brown, the olive tending to green in some, and to brown in others. The markings are of various forms, but are chiefly small spots of a dark buffy umber, larger and more numerous towards the more rounded portion of the egg.

Larus canus.

THE MEW GULL.

Larus canus, LINN. S. N. ed. 10, I. 1758, 136; ed. 12, I. 1766, 224. — SHARPE & DRESSER, B. Eur. pt. xvii. (1873). — SAUNDERS, P. Z. S. 1878, 177. — RIDGW. Nom. N. Am. B. 1881, no. 671. — COUES, 2d Check List, 1882, no. 779.
Larus canus, a. *canus*, COUES, B. N. W. 1874, 638.
Larus cinereus, SCOP. Ann. i. Hist. Nat. 1769, 80.
Larus hybernus, GMEL. S. N. I. ii. 1788, 596.
Larus procellosus, BECHST. Orn. Tasch. 1802, 373.
Larus cyanorhynchus, MEYER, Tasch. Vög. Deutschl. II. 1810, 480.
Laroides canescens, BREHM, Vög. Deutschl. 1831, 753.
Larus canus, var. *major*, MIDDEND. Sibir. Reise, II. 1853, 243.
Larus Heinei, HOMEYER, Naum. 1853, 129.
Larus (*Glaucus*) *lachrymosus*, "LICHT.," BRUCH, J. f. O. 1853, 102.
Larus delawarensis (part), COUES, Pr. Ac. Nat. Sci. Philad. 1861, 246 (Labrador).
Larus Audouini, TRISTRAM, Ibis, 1868, 330 (not of PAYR. 1826).

HAB. Palæarctic Region; accidental or casual in Labrador.

SP. CHAR. *Adult, in summer:* Mantle pale ashy blue (intermediate in shade between that of *L. cachinnans* and *L. argentatus*), the secondaries and tertials broadly, but not abruptly, white terminally. Outer primary black, with a white subterminal space, including both webs and the shaft, of about 2.00–2.25 inches in length; second quill similar, but the white space smaller (about 1.00–1.25 inches in length), the base of the feather more distinctly slaty; third usually[1] without any white, except at the tip, the basal portion abruptly bluish gray; fourth, similar, but the bluish gray occupying about the basal half of exposed portion of the quill, and more sharply defined against the black; fifth grayish blue, tipped with white, and with a large subterminal space of black, an inch or more in length (running anteriorly along the edges for about .75 of an inch, the pale bluish almost or quite white where joining the anterior border of the black on inner web; sixth quill with a much smaller (about .50 wide) subterminal black bar; remaining quills grayish blue, passing into white terminally. Remainder of the plumage snow-white. Bill greenish olivaceous (in skin — greenish yellow in life), the terminal third yellow; iris grayish brown; eyelids vermilion-red; legs and feet yellowish green.[2] *Adult, in winter:* Similar, but occiput and nape longitudinally spotted with grayish brown. *Young, first plumage* (No. 18221, Henley Harbor, Labrador, Aug. 21; E. COUES): Above, grayish brown, the feathers irregularly but broadly bordered with pale dull buff; greater wing-coverts and secondaries pale bluish gray, bordered with pale buff, and with a subterminal border of brownish dusky; tertials grayish brown, bordered with buffy white; primary coverts and primaries dusky black, very narrowly tipped with white; rump and upper tail-coverts white, marked with irregular sagittate spots of brownish dusky; basal two-thirds of the tail bluish white (fading into pure white basally); terminal portion dusky, narrowly tipped with white, the grayish white of the lateral feathers finely mottled with dusky posteriorly. Lower parts grayish white, the jugulum and sides thickly spotted with light grayish brown. "Bill white, tip black; mouth white; legs dusky white" (MS. on label).

Wing, 14.00–14.50 (average, 14.23) inches; culmen, 1.35–1.60 (1.50); depth of bill through angle, .45–.50 (.47); tarsus, 1.90–2.25 (2.03); middle toe, 1.35–1.45 (1.39). (Five specimens.)

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[1] In some examples — probably very old birds — there is a roundish spot of white on the inner web about 1.50 inches from the tip of the feather.

[2] The fresh colors of the soft parts in this species are given by Macgillivray as follows: *Adult male, in summer:* "The bill is greenish yellow, purer toward the end; the margins of the eyelids vermilion. *Young:* The bill is black, at the base livid flesh-color; the iris dusky; the edges of the eyelids brown; the feet flesh-color, tinged with yellow." *Adult male, in winter:* "The bill is of a uniform grayish-green tint, shaded at the end with ochre-yellow; the basal margins and mouth orange; the edges of the eyelids dull reddish; the iris brown. The feet deep greenish-gray; the claws black." *Young, in second winter:* "Bill yellowish green, with the end dusky; feet livid yellowish green."

The Common Gull of Europe — more generally known in England and Scotland as the Sea-mew and the Sea-mall — is of rare and accidental occurrence in North America. One was taken by Dr. Coues, Aug. 21, 1860, at Henley Harbor, Labrador (SAUNDERS, "Proc. Zool. Soc.," 1878, p. 178); and this is the only authentic instance of its capture on this continent. Its habitat is throughout the Palæarctic Region, but it is very rare in Iceland.

In its general habits this Gull differs but very little from most of its congeners; and in one respect — namely, its partiality for open cultivated fields — strikingly resembles our own *Larus delawarensis*. Macgillivray states that in the fall or winter, when the fields have been cleared of their produce, and are being prepared for another crop, the Sea-mew deserts the coast and appears in large flocks, finding subsistence in picking up worms and larvæ which the farmers' labors have exposed. These flocks may be met with in all the agricultural districts, both near the sea and in parts quite remote from it. They are more numerous in stormy weather, but also in the finest days of winter they may be seen in close attendance upon the plough. Should the country become covered with snow, this bird retreats to the shore; but returns as soon as a thaw partially exposes the ground.

This bird is said to have a light, buoyant flight, during which it often inclines to one side; it walks and runs prettily, with short steps, patting the sands at the edge of the water with its feet, emitting a shrill, somewhat harsh cry, and often on the approach of the sportsman giving the alarm to other birds. It is not, however, so sensible of danger as are the larger Gulls; and both in the fields and on the sea-shore will often allow a person to come within gunshot. It never molests any other species, nor is it quarrelsome among its fellows. Its food consists of small fishes, such as sand-eels and young herring, which it picks from the water. It also feeds on stranded fish, star-fishes, mollusca, shrimp, and small crustacea. It will sometimes pick up grain in the fields, and when domesticated will eat bread. It is easily tamed, but will not long survive confinement.

This species is much more abundant in Great Britain in winter than in summer, while it breeds more or less along the entire coast. An immense colony occupies a small island in the Hebrides. It breeds alike on the grassy summits of precipitous rocks near the sea, on moorland lochs at some distance inland, and even on the highest mountain ranges. It is a common resident all along the Norwegian coast, and large numbers breed between Stavanger and the North Cape. It also breeds in large numbers on the rivers and fresh-water lakes in the interior of Scandinavia. This Gull is also a common species, and breeds through almost the whole of Central and Northern Russia; and it is abundant on the Prussian coast, and on the northern coast of France. It is an irregular winter visitant of most parts of Southern Europe, as well as of Asia Minor and other parts of Western Asia. In Eastern Asia it is replaced by a larger variety, from which, however, it does not specifically differ.

The Sea-mew breeds on the sea-coast, occasionally also on inland lakes, making a carefully constructed nest among the drift-stuff on the shore. Its usual number of eggs is said to be three. The nests are composed generally of fuci, occasionally of grass, bits of turf, and various vegetable substances. The eggs are described as being of a broadly ovate form, olive-brown, yellowish brown, oil-green, greenish gray, or greenish white, irregularly marked with dark brown and purplish gray, these markings being generally larger and more numerous on eggs having the deepest ground-color. The eggs vary in length from 2.08 to 2.25 inches, and have an average breadth of 1.50.

Mr. Robert Collett found this species breeding in Norway on fresh-water lakes, four thousand feet above the sea. In one instance a pair was found by Dr. Ludwig Holtz occupying the deserted nest of a Hooded Crow, built on a bush near the shore, ten feet from the ground. The same pair was said to have nested there during several successive years. In another instance Mr. Collett observed a pair near Trondhjem, in the summer of 1868, which had taken possession of the nest of an old Crow, on the top of a fir-tree. The eggs when removed were replaced by another set.

Dr. Rey informed Mr. Dresser that a careful measurement of fifty specimens gave as the average size of the egg of this bird, 2.30 by 1.63 inches, the largest measuring 2.55 by 1.62, and the smallest 2.11 by 1.60.

Larus Heermanni.

HEERMANN'S GULL.

Larus Heermanni, Cass. Pr. Ac. Nat. Sci. Philad. VI. 1852, 187; Illustr. B. Tex. Cal. etc. 1853, 28, pl. 5 (adult and young). — Saunders, P. Z. S. 1878, 182. — Ridgw. Nom. N. Am. B. 1881, no. 672. — Coues, 2d Check List, 1882, no. 781.

Blasipus Heermanni, Bonap. Consp. II. 1857, 211. — Lawr. in Baird's B. N. Am. 1858, 848. — Baird, Cat. N. Am. B. 1859, no. 666. — Coues, Pr. Ac. Nat. Sci. Philad. 1862, 304.

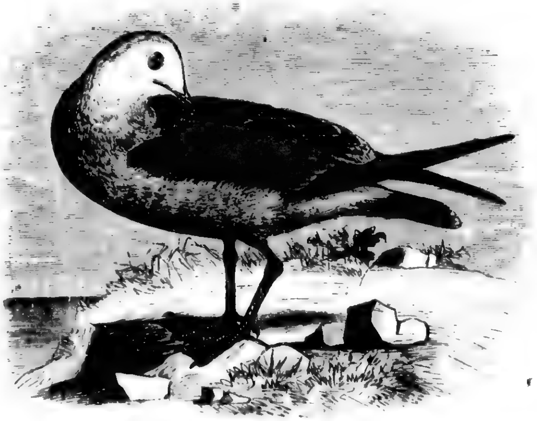
Larus (*Blasipus*) *Heermanni*, Scl. & Salv. P. Z. S. 1871, 574 (figure). — Coues, B. N. W. 1874, 641.

Larus Belcheri, Schleg. Mus. P.-B. Lari, 1863, 9 (part; excl. syn.; not of Vigors, 1829).

Larus (*Blasipus*) *Belcheri*, Coues, Key, 1872, 314 (excl. syn. *fuliginosus*); Check List, 1873, no. 551.

Hab. Pacific coast of America, from British Columbia to Panama.

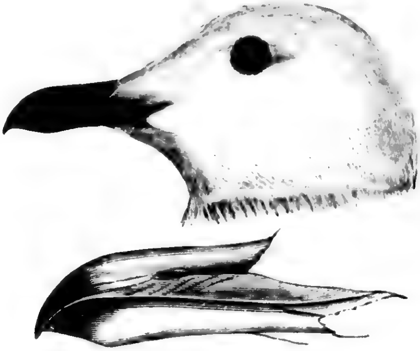
Sp. Char. *Adult, summer plumage:* Head and upper part of the neck white, changing gradually into ash-gray on the lower parts and plumbeous-slate on the upper surface, the wings rather darker than the back, and with a slight brownish tinge; secondaries dusky slate, broadly tipped with white; tertials like the coverts, but passing terminally into white, like the secondaries; primaries dusky black, the shorter quills narrowly tipped with white. Upper tail-coverts light ash-gray, like the medial lower parts. Tail dusky black, tipped with white. Bill bright red, tipped with black (sometimes wholly red); eyelids red; iris "brownish gray;" legs and feet black.



L. Heermanni, summer adult.

Adult, in winter: Similar, but the head and upper parts of the neck dusky grayish brown. *Young, first plumage:* Sooty grayish brown, lighter and more grayish beneath; wing-coverts, scapulars, rump feathers, and upper tail-coverts, bordered terminally with grayish white; remiges dusky black; tail blackish dusky, very narrowly tipped with white. Bill brownish, the terminal third black; legs and feet brownish black. *Young (second year?):* Similar to the preceding, but without light margins to wing-coverts, etc., the general color rather darker, and the tail without white tip. Bill light reddish for basal two thirds, the end black; legs and feet brownish black.

Total length, about 17.50 inches; wing, 13.50; tail, 5.50; bill, from gape, 2.50.



Heermann's Gull — or the White-headed Gull, as this species is called by Mr. Cassin — was first made known by him as a North American bird in 1852, and is said to be one of the handsomest of the large family to which it belongs. It was first noticed by Dr. A. L. Heermann, who found it of frequent occurrence on the coast of California, and most numerous in the harbor of San Diego in the month of March, at which time, although a few of these birds were in mature plumage, yet a large proportion of them were evidently in an immature dress. This Gull was usually observed to be flying in company with *L. occidentalis,* and to be engaged in the capture of small fishes, of which there were many species in the harbor of San Diego. It also appeared to feed on the small maritime animals of various kinds which inhabit the immense beds of kelp (*Macrocystis*) occurring on that coast, and which are so extensive off the harbor of San Diego. The nests and eggs of this bird were found by Dr. Heermann on the Coronados, a group of islands lying a short distance outside the entrance of this harbor.

Mr. Salvin met with this species on the Pacific coast of Guatemala, several specimens having been taken near Chiapam, all in their immature plumage. The Gulls were usually noticed along the shore, and not in the lagoons.

Mr. Henshaw speaks of this species as being common all along the coast of California, and as breeding upon many of the adjacent islands. A very large flock were pursuing their way along the shore near Santa Barbara, and later in the day he came upon them where they had settled on a rocky point that jutted out into the water. Many were fishing, hovering over the half-submerged kelp-covered rocks, the shallow water surrounding which abounded in the smaller kinds of fish. At the discharge of his gun the mass of birds flew wildly about, and it was some time before they left the place. The flock was composed of old males; and it was evident that the journey was one between their breeding-grounds and the fishing-place, where there was probably an unusual abundance of food fitted for their young. Mr. R. Browne met with this species on the coast of Vancouver Island.

Dr. Cooper writes that he has noticed this Gull along the entire Pacific coast, and that it was abundant in winter; but that he found it rather rare in summer, and saw none of this species between April and the end of June, at which latter date he saw some of the young of that year about the islands, though he could find no evidence of their having been hatched there. Referring to the statement of Dr. Heermann that this species breeds on the Coronados Islands, Dr. Cooper remarks that it probably breeds on other island groups on the coast south of San Francisco.

These birds are common as far north in the summer as the Straits of Fuca, but come south to the Columbia in winter. The young-plumaged birds are very constant attendants on the flocks of Pelicans, and rob the latter of a portion of the fish which these bring up in their scoop-like pouches, seizing upon those which fall out or hang outside, the Pelicans never resenting this treatment. Audubon ascribes the same habit to the Black-headed Gull in Florida.

At San Diego Dr. Cooper did not observe that this species followed the Pelicans so much as it does at the north. It is almost exclusively a fish-eater, and is known to dive for this food. It is also very much given to frequenting the fields of kelp which fringe the shores, at a distance of from one to three miles, where it finds small crustacea and mollusca. In one instance only did he see one of this species feeding on the carcase of a bird, and this was a bird which he himself had thrown away. This Gull also follows vessels in or near the bays, but never accompanies them far to sea, although its flight is very rapid. Dr. Heermann mentions having once seen this species feeding on a dead seal.

According to Dr. Newberry, this species is common as far up the Sacramento as Feather River; but Dr. Cooper never saw it far from the salt water. Its voice is said to be faint, and rather querulous; and it is rarely heard except when the bird is fishing.

Colonel Grayson met with this species on the Pacific coast near Mazatlan, in Western Mexico, and also on the Island of Isabella; but it was not common there. In the neighborhood of Mazatlan it occurred chiefly as a winter visitor. Specimens were shot on the sea-beach near that city in February and March. An egg of this species collected by Colonel Grayson on an island near Mazatlan (Smithsonian Institution, No. 15519) is of a rather oblong oval form, tapering toward one end, and rounded at the other. It measures 2.35 inches in length by 1.65 in breadth. Its ground-color is a light clayish-drab, over which it is marked with bold spots of lilac-gray and two different shades of sepia-brown. Another egg in my collection — procured from the Farallones by Mr. George F. Faulkner — measures 2.27 inches in length by 1.55 in breadth. Its ground-color is a deep drab, and the markings are large blotches of dark bistre, approaching to blackness. These are scattered over the surface of the egg, and are of rounded shape about the smaller end, and more irregular in shape, and more confluently grouped together, about the larger end. The obscure shell-marks of lilac are few and scattered.

Larus atricilla.

THE LAUGHING GULL.

Larus atricilla, LINN. S. N. ed. 10, I. 1758, 136; ed. 12, I. 1766, 225 (based on *Larus major*, Catesb. I. 89, but also includes the European species, *L. ridibundus*, LINN.). — NUTT. Man. II. 1834, 291. — AUD. Orn. Biog. IV. 1838, 118, pl. 314; Synop. 1839, 324; B. Am. VII. 1844, 136, pl. 443. — COUES, Key, 1872, 315; Check List, 1873, no. 554. — SAUNDERS, P. Z. S. 1878, 194. — RIDGW. Nom. N. Am. B. 1881, no. 673.

Larus (Chroicocephalus) atricilla, BRUCH, J. f. O. 1853, 106. — COUES, B. N. W. 1874, 650.

Chroicocephalus atricilla, LAWR. in Baird's B. N. Am. 1858, 850. — BAIRD, Cat. N. Am. B. 1859, no. 667. — COUES, Pr. Ac. Nat. Sci. Philad. 1862, 310; 2d Check List, 1882, no. 786.

Larus ridibundus, WILS. Am. Orn. IX. 1814, 89, pl. 74, fig. 4 (not of LINN.).

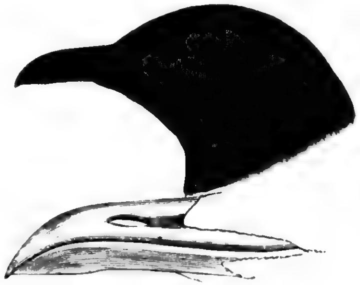
Larus plumbiceps, BREHM, Lehrb. 722 (GRAY).

Larus (Atricilla) megalopterus, BRUCH, J. f. O. 1855, 287.

Atricilla Catesbæi, BONAP. Naumannia, 1854, 212.
Atricilla minor, BONAP. l. c.
Atricilla macroptera, BONAP. l. c.
Larus (*Atricilla*) *micropterus*, BRUCH, t. c. 288.

HAB. Tropical and Warm-temperate America, north to Maine, Ohio, Illinois, etc., but chiefly along the sea-coast; south to the Lower Amazon; both coasts of Central America. Casual in Europe.

SP. CHAR. *Adult, in summer:* Head and upper half of the neck (extending farther down in front than on the nape) dark slate-color, with a slight brownish tinge, darkest on the neck; an elongated white spot on each eyelid; lower half of the neck, all round, entire lower parts, upper tail-coverts, and tail, pure white, the under surface with a delicate roseate tinge in fresh specimens; mantle deep plumbeous, the secondaries and tertials broadly tipped with white. Outer five primaries black, with or without a small white apical spot, the bases of the third, fourth, and fifth slaty for a greater or less distance, this sometimes abruptly defined against the black, but oftener grading insensibly into it; remaining quills hoary plumbeous, tipped with white, the sixth sometimes with a subterminal black spot. Bill dark brownish red, the terminal third of the culmen and the gonys blood-red or carmine; eyelids dull dark red; rictus and interior of mouth fleshy red; iris dark grayish brown; legs and feet dark reddish brown, the webs darker; claws black. *Adult, in winter:* Similar, but head and neck white, the occiput and auricular region spotted or mottled with brownish gray, and the eyes more or less surrounded by the same. Bill and feet more dusky. *Young, first plumage:* Interscapulars, scapulars, and wing-coverts, grayish brown centrally, broadly bordered with pale grayish buff or clay-color; greater wing-coverts ash-gray, tinged on terminal edges with pale grayish buff; secondaries dusky, abruptly tipped with white; primary coverts and primaries black, the latter narrowly tipped with white. Central portion of the rump light brownish ash; lateral and posterior portion of the rump, upper tail-coverts, and posterior lower parts, white. Basal half of the tail light ash-gray; terminal portion black, narrowly tipped with white. Head, neck, breast, and sides, nearly uniform brownish gray, darker on the occiput and nape, and more or less tinged with pale buffy beneath, especially in younger individuals; abdomen grayish white or pale brownish gray. Bill and feet dusky brownish (in skin). *Downy young:* Above, grayish fulvous, the head irregularly striped or spotted, the back, wings, and rump irregularly marbled with dusky. Lower parts light grayish fulvous, inclining to ochraceous on the breast and middle of the abdomen, which are immaculate; lateral and under parts of the head marked with several large and distinct spots of black; foreneck, sides, flanks, and anal region dull fulvous-grayish, faintly mottled with darker. Bill dull light brown; legs and feet dull dusky brown.



Total length, about 16.50 inches; wing, 13.00; tail, 5.00; culmen, 1.75; depth of bill through nostrils, .45; tarsus, 2.00; middle toe with claw, 1.50.

The Black-headed, or Laughing, Gull is found at different seasons along the whole Atlantic coast of the United States. It breeds as far to the northeast as Tennant's Harbor, in Maine, near the western extremity of Penobscot Bay, and during [illegible] latter part of the summer extends its migrations as far as the Bay of Fundy; bu [illegible] of these birds are to be seen north of Florida after the early part of October. This is an abundant and a resident species on both coasts of Florida, along the whole extent of the Gulf of Mexico, and both on the Atlantic and on the Pacific coast of Central America. It is not found on the Pacific coast of the United States.

This Gull is more or less abundant in nearly all the West India Islands, where it breeds, and is probably resident throughout the year. Léotaud cites it as being a somewhat uncommon visitant of Trinidad, where it is known to occur only from July to October. It is a bird that is easily tamed, and will live apparently perfectly contented and domesticated in the courtyards of dwellings.

Professor Alfred Newton obtained examples of this species at St. Thomas, and often saw small birds of this family, with a dark hood, about St. Croix, which he had no hesitation in referring to this species. They generally kept in small flocks at no great distance from the shore. Professor Newton also states that the only trustworthy instance on record of the occurrence of this Gull in Europe is that mentioned by Colonel Montagu, which took place August, 1774. The other supposed instances, mentioned by other writers, are now presumed to have reference to individuals of *Larus Audouini.*

Mr. E. C. Taylor mentions this species as being the only Gull he saw in the West India Islands, and he did not meet with it south of the Island of St. Thomas. There, however, and at Porto Rico it was very abundant, especially in the harbor of St. Thomas and at San Juan de Porto Rico.

On the authority of Mr. Hill, Mr. Gosse includes this species among the birds of Jamaica; it is found about the San Pedro Keys.

Mr. Salvin found it quite common about the Belize, and thinks that it breeds on the Keys along the coast. He subsequently met with it both on the Atlantic and on the Pacific coast of Guatemala. Individuals from the eastern coast were in the plumage of summer; while those from Chiapam were either in their winter or in their immature plumage.

Mr. Dresser speaks of this Gull as being abundant on the sea-coast of Texas during the summer, and he saw great numbers off Bagdad from June to August; when at Galveston in June, 1864, he found it breeding abundantly, making a very slight nest of straws and drift-stuff, in which it lays four eggs. The nest was generally placed on the ground or in a tussock of grass.

Dr. Bryant found it abundant, resident, and breeding, at New Providence, in the Bahamas. It is of rare occurrence in Bermuda, where Major Wedderburn reports the capture of a single specimen taken alive in the winter of 1851.

This species arrives on the coast of Long Island in the latter part of April, is quite common, and is well known to sportsmen as the "Laughing Gull" — a name it evidently well deserves, as its notes resemble in the most striking manner a loud burst of derisive laughter. This is more especially the case when the bird has eggs or young, and these are threatened by intruders. Its cries of deep distress strangely resemble shouts of laughter, and seem expressive of sentiments quite unlike what they really are intended to convey. This is a courageous bird, and willingly exposes itself to almost certain death in defence of its young. I have found it breeding in large numbers on the Island of Muskegat, near Nantucket, and again on small islands near the entrance of the Chesapeake. In both these places the birds were much harassed, and their eggs and young were taken by the fishermen. In the former place, where I found them so abundant in 1842, I am told they have already become extinct.

This Gull breeds in considerable abundance on the coast of Long Island, and its eggs are said to be three in number, rarely more. On the low islands in South Bay, eggs were found by Giraud which had been dropped on the grass with little or no preparations for a nest. He speaks of this bird as being watchful and timid, like the rest of the Gulls, and yet very courageous in defence of its young. He frequently observed it when fishing, and when making aërial excursions in company with the common Tern, *Sterna hirundo.*

Colonel Grayson found this species on the Pacific coast, near Mazatlan, on the west coast of Mexico.

Audubon regarded it as a resident all the year round on the Southern coast, from South Carolina to Mexico, and as being more especially abundant at all times on the shores and Keys of Florida. None were observed on the Mississippi above New Orleans — at which place, however, it is plentiful during winter. He thinks that none of these Gulls ever travel beyond tide-water in any stream. This is perhaps true as a general rule; and there is, at all events, no positive evidence that this species has ever been actually taken in the interior. On Lake Koskonong in the summer, some twenty-five years ago, Professor Kumlien shot a Gull which he thinks must have been of this species.

Audubon found it breeding as early as the first of March; although in Massachusetts it breeds as late as the middle of June. He speaks of its nest as being somewhat elaborately made of dry seaweed and land plants, and as sometimes being three inches high. All the nests which I have seen were slight depressions in the soil, scantily and loosely lined with dry grass. Audubon mentions having once found a nest of nearly double the ordinary size, formed by two pairs, where during the rainy weather the two birds sat close to each other, but each on its own three eggs. The males as well as the females concerned in this singular partnership manifested great fondness for each other. The eggs, which were never more than three in number, he found to average 2.06 inches in length, and a little more than 1.50 in breadth, varying in their general tint, but being usually of a light earthy olive, blotched and spotted with dull reddish brown and black, the markings being more abundant toward the larger end of the egg. These eggs are excellent as an article of food.

The Laughing Gull is eminently social and sympathetic. It associates and breeds in large companies. If one is wounded and falls into the water its cries of distress are sure to attract its companions, who soar above it and plunge toward it as if desirous of affording aid. Audubon states that off the coast of Florida this Gull watches the movements of the Brown Pelican, and when the latter dives flies toward it, alights on its head as it rises from the water, and snatches at such fish as may escape from the Pelican's pouch when the water is allowed to drain off.

Eggs of this species (Smithsonian Institution, No. 2369) from Sand Shoal Island, Va., vary from 2.20 to 2.25 inches in length, and from 1.55 to 1.60 in breadth. Their ground-color is a brownish olive; but this varies greatly, sometimes becoming a brownish white. One specimen from the Tortugas, Fla. (Smithsonian Institution, No. 4794), measures 2.45 by 1.45 inches. The Smithsonian Collection also contains eggs from Cape May and from Cuba.

Larus Franklini.

FRANKLIN'S ROSY GULL.

Larus atricilla, SABINE, App. Franklin's Polar Sea, 1823, 695 (not of LINN. 1758).

Larus Franklinii, SW. & RICH. F. B. A. II. 1831, 424, pl. 71. — AUD. Orn. Biog. V. 1839, 324; Synop. 1839, 325; B. Am. VII. 1844, 145. — COUES, Key, 1872, 316; Check List, 1873, no. 555. — SAUNDERS, P. Z. S. 1878, 195. — RIDGW. Nom. N. Am. B. 1881, no. 674.

Larus (*Chroicocephalus*) *Franklinii*, BRUCH, J. f. O. 1855, 289. — COUES, B. N. W. 1874, 653.

Chroicocephalus Franklinii, LAWR. in Baird's B. N. Am. 1858, 851. — BAIRD, Cat. N. Am. B. 1859, no. 668. — COUES, 2d Check List, 1882, no. 787.

Larus pipixcan, WAGL. Isis, 1831, 515.

Larus cucullatus, LICHT. Nomencl. 1854, 98 (no description). (Mexico.)

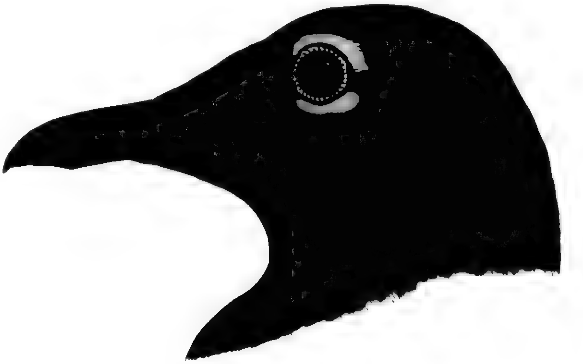
Larus (*Chroicocephalus*) *cucullatus*, BRUCH, J. f. O. 1855, 290. — LAWR. in Baird's B. N. Am. 1858, 851. — BAIRD, B. N. Am. 1859, no. 669.

Larus cinereo-caudatus, PHIL. & LANDB. Wiegm. Archiv, 1861, 293 (Chili).

? *Larus* (*Chroicocephalus*) *Kittlitzii*, BRUCH, J. f. O. 1853, 104.

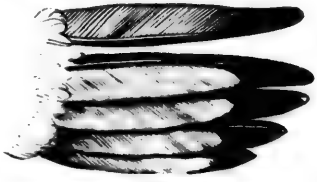
Chroicocephalus Schimperi, BRUCH, l. c. (not of SCHLEG. 1863, which = *L. Saundersi*, SWINHOE).

HAB. The interior of North America, chiefly the Mississippi Valley and northward, but breeding mostly north of the United States; Central and South America, during migrations, as far as Chili; part of the West Indies.



Adult, summer plumage.

SP. CHAR. *Adult, in summer:* Head and upper part of the neck plumbeous-black (more plumbeous anteriorly); an elongated white spot on each eyelid; lower part of the neck (all round), entire lower parts, lower part of the rump, and upper tail-coverts snow-white, the neck and lower parts with a deep tinge of delicate rose-pink in fresh specimens. Mantle deep bluish plumbeous, a little lighter than in *L. atricilla*, the secondaries and tertials broadly tipped with white. Tail white, the four to six central feathers tinged with pale grayish blue, deepest on the intermediæ. Primaries bluish gray, the shafts white, the five outer quills marked with a subterminal space of black, varying in extent from nearly 2.00 inches long on the second quill to about .50 on the fifth, each quill broadly tipped with white, this occupying on the outer about 1.50 inches of the terminal portion, on the rest less than .50 of an inch; the bluish gray of the basal portion



" L. cucullatus."

of the quills becoming nearly or quite white where joining the black, and the shaft of the black portion also black; remaining quills light grayish blue, broadly, but not abruptly, tipped with white, the sixth sometimes marked with a subterminal black spot or bar. Bill deep red, with a more or less distinct darker subterminal band; eyelids red; feet deep red. *Adult, in winter:* Similar, but head and neck white, the occiput, with orbital and auricular regions, grayish dusky. Bill and feet brownish, the former tipped with orange-reddish. *Young, first plumage:* Top and sides of the head (except forehead and lores), back, and scapulars grayish brown, the longer scapulars bordered terminally with pale grayish buff; wing-coverts bluish gray, tinged with grayish brown; secondaries dusky, edged with pale grayish blue, and broadly tipped with white; primaries dusky, the inner more plumbeous, all rather broadly tipped with white. Central portion of the rump uniform light bluish gray; lateral and posterior portions of the rump, upper tail-coverts, entire lower parts, forehead, lores, and eyelids white. Bill brownish, dusky terminally; feet brown (in skin).

Not quite adult (= "L. cucullatus"), summer plumage.

Total length, about 14.00 inches; extent, 35.00; wing, 11.25; culmen, 1.30; depth of bill through nostrils, .35; tarsus, 1.60; middle toe, with claw, 1.60.

We still know comparatively little of the specific habits of Franklin's Rosy Gull; nor can we give with any exactness its geographical distribution. It appears to be common throughout the Fur Countries during the summer from about the 50th to the 65th parallel, and perhaps farther north. It is a great wanderer in its migrations, and probably passes the winter in Central and South America. Unlike *L. atricilla*, it appears to confine itself in the summer to fresh water, and is not to be found on the margin of the ocean, excepting in its migrations. It was first described by Sir John Richardson from a specimen obtained in June, 1827, on the Saskatchewan. It was found to be a very common species in the interior of the Fur Countries, where it frequents the shores of the larger lakes. It was almost exclusively found in flocks, and was observed to be a very noisy bird. It breeds chiefly in marshy places.

Captain Blakiston met with this species in the region of the Saskatchewan, where he found it rather abundant. It was breeding on the lakes of the Buffalo Plains in the summer.

In a letter dated May 21, 1860, Dr. J. G. Cooper wrote me that he found this Gull not uncommon in the neighborhood of Sioux City; and though he had no positive evidence to that effect, he had no doubt that it was breeding in that region.

Dr. Giraud is authority for the occurrence of this species in immature plumage on Long Island; but as no other observer has made mention of its presence on the Atlantic coast, this is perhaps an error. He speaks of it as a very handsome and strongly marked species, and as occasionally uttering, as it flies, a peculiarly shrill and plaintive cry.

Colonel Grayson met with this bird in and about Mazatlan, and procured specimens in December. A few other birds of this species were seen during the same month, but they were not common in that locality.

Mr. Salvin obtained a single specimen of this Gull in the plumage, which has been described with the name of *C. cucullatus*, at Chiapam, on the Pacific coast of Guatemala, in January, 1863.

Mr. Donald Gunn, in his Notes and Journal of his visits to Shoal and other lakes, mentions his having met with this species. We copy from his Journal: —

"We passed from Shoal Lake to Manitoba. The Franklin Gulls had forsaken the marsh at the south end of that lake — which movement of theirs reduced us to the necessity of following them to the north as far as Swan Creek. Here we found them in considerable force. Their nests were among the bulrushes — flat on the water, and composed of these rushes. We had a hard run for the eggs, as lots of fellows from the Oak Point followed us, and began an active competition. However, we secured one hundred and sixty-five of their eggs, and thirteen specimens of the Gulls themselves."

This Gull was found breeding at Selkirk Settlement and in the Red River Settlement, as well as on Lake Manitoba, by Mr. Gunn.

The Smithsonian Collection contains a specimen which I received from Professor Kumlien in 1871; it was shot on the 29th of October. He writes me that but few others have been noticed in that neighborhood.

The ground-color of the eggs of this Gull varies from a pale grayish green to a light drab, and even to an olive. The markings vary greatly in shape and size. Some are rounded, others are zigzag; some are large, and others are small; and all are of a very dark olive-brown. Those in the Smithsonian Collection were brought by Mr. Gunn from Shoal Lake. Five eggs present the following measurements: 2.00 by 1.40 inches; 2.00 by 1.45; 2.05 by 1.50; 2.15 by 1.45; 2.25 by 1.50.

Larus philadelphia.

BONAPARTE'S GULL.

Sterna philadelphia, Ord, Guthrie's Geog. 2d Am. ed. II. 1815, 319.

Chroicocephalus philadelphia, Lawr. in Baird's B. N. Am. 1858, 852. — Baird, Cat. N. Am. B. 1859, no. 670. — Newton, P. Z. S. 1871, 57, pl. 4, fig. 6 (egg). — Coues, Pr. Ac. Nat. Sci. Philad. 1862, 310; 2d Check List, 1882, no. 788.

Larus philadelphia, Gray, List Brit. B. 1863, 235 (Great Britain). — Coues, Key, 1872, 316; Check List, 1873, no. 556.

Larus philadelphiæ, Saunders, P. Z. S. 1878, 206. — Ridgw. Nom. N. Am. B. 1881, no. 675.

Larus (Chrœcocephalus) philadelphia, Coues, B. N. W. 1874, 655.

Larus minutus, Sabine, App. Franklin's Voy. 1823, 696. — Sw. & Rich. F. B. A. II. 1831, 426 (not of Pall. 1776).

Larus capistratus, Bonap. Specc. Comp. 1828, 69 (not of Temm. 1820).

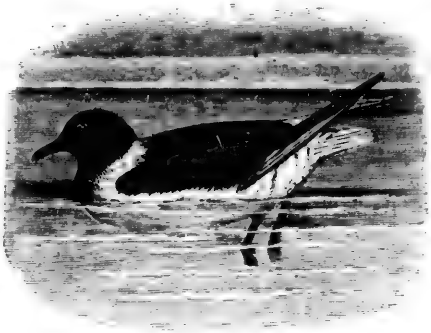
? *Larus melanorhynchus*, Temm. Pl. Col. livr. 85, pl. 504 (1830; Chili).

Larus Bonapartii, Sw. & Rich. F. B. A. II. 1831, 425, pl. 72. — Nutt. Man. II. 1834, 294. — Aud. Orn. Biog. IV. 1838, 212, pl. 324; Synop. 1839, 323; B. Am. VII. 1844, 131, pl. 452.

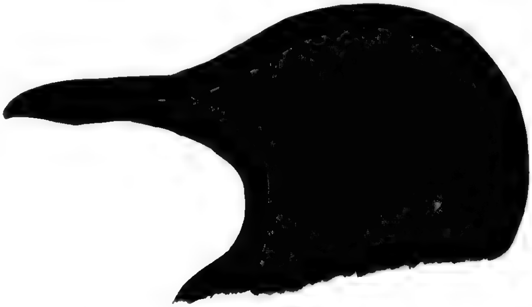
Larus (Chroicocephalus) subulirostris, "Bp." Bruch, J. f. O. 1853, 105 (type in Mus. Mainz).

Hab. The whole of North America, but no valid record of its occurrence south of the United States, except Bermudas (Hurdis).

Sp. Char. *Adult, in summer:* Head and upper part of the neck dark plumbeous, the eyelids marked by an elongated white spot. Lower part of the neck, entire lower parts, tail, upper tail-coverts, lower and lateral portions of the rump, border of the wing, alulæ, primary coverts, and greater portion of the primaries snow-white, the neck and lower parts with a delicate rose-pink blush in fresh specimens. Mantle, including upper and middle portions of rump, delicate light pearl-blue. Three outer primaries chiefly white, the outer web of the exterior quill, and the terminal portion of all, deep black; fourth quill similar to the third, but the inner web pale grayish blue; fifth and sixth quills pale grayish blue, with a large subterminal black space, and tipped with white (third and fourth quills also marked with a small white apical spot); remaining quills pale grayish blue, without white tips, but marked near the end, usually on inner web only, with a black spot. Bill deep black; iris dark brown; interior of mouth, with legs and feet, rich clear orange-red;[1] claws black. *Adult, in winter:* Similar, but head and neck white, the occiput tinged with grayish, and the auricular region marked by a spot of dusky gray. Legs and feet flesh-color.



L. philadelphia, summer plumage.



Summer adult.

Young, first plumage: Sides and under part of head and neck, entire lower parts, upper tail-coverts, and basal three fourths of the tail pure white; crown, occiput, and upper part of the back brownish gray; a dusky grayish spot on the auricular region; scapulars and posterior interscapulars grayish umber, tipped with pale buff; central area of lesser wing-covert region dusky brownish gray; rest of wing-coverts, edges of secondaries, greater portion of inner primaries, with upper and central portions of the rump, light grayish blue; band across end of tail black or dusky, the tip narrowly whitish. Outer primary with the entire outer web, and a stripe along the inner next the shaft, with the end, black, the remaining portion white; second and third quills similar, but the white successively more restricted; fourth, bluish white on both webs (inner web more bluish), the subterminal portion black for more than an inch, the tip with a small white spot; remaining quills similar, but deeper bluish gray. Bill dusky; feet pale brownish (in skin). *Young, second year:* Similar to the adult in winter plumage, but central lesser wing-coverts dusky, tail crossed by a subterminal band of dusky brown, and primaries marked as in the first plumage.

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[1] In some very high-colored specimens the *feathers* surrounding the naked rim of the eyelids are fine orange-red.

Total length, about 14.00 inches; extent, 32.00; wing, 10.25; culmen, 1.20; depth of bill through nostrils, .25; tarsus, 1.40; middle toe with claw, 1.40.

This is a widely distributed species, found throughout North America at different seasons, being common both to the Atlantic and the Pacific coasts, and breeding from about latitude 45° or 50° north nearly or quite to the Arctic Ocean. It winters in the southern portions of the United States, on both shores, and also, to a certain extent — not well ascertained — in Mexico and in Central America. It is found in the interior as well as on the sea-coast, but chiefly in its migrations. It is abundant in the waters of the St. Croix and on Passamaquoddy Bay, and is quite common in the summer. Richardson states in regard to it, that he found it in large numbers in all parts of the Fur Countries, where it associates with the Terns, and is distinguished by its peculiar shrill and plaintive cry. Captain Blakiston mentions that he met with this species at the mouth of Hayes River, on the west coast of Hudson's Bay; and Mr. Murray received specimens from the same locality. This Gull was also found on the Mackenzie River by Mr. Bernard Ross.

Mr. J. A. Allen obtained three specimens in Great Salt Lake Valley; these were all in the adult plumage, and differed from the eastern specimens of this Gull in having thicker, much shorter, and less decurved bills.

Birds of this species occur as occasional stragglers in various parts of New England; and they are quite common in spring and fall in the neighborhood of Calais, on the St. Croix River, and in Passamaquoddy Bay. They are less abundant in the summer; but many remain, and are supposed to breed somewhere in that neighborhood in trees. In my visits to Eastport, the Bay of Fundy, and its islands, I have noticed them in large numbers in the months of June and July. I could obtain, however, no evidence in any quarter of their nesting in that vicinity. If they do breed there, it has entirely escaped the notice of those who live in that region. The Gulls were all in flocks, and mostly in mature plumage; but all appeared to be unmated. I found them on the water at all hours of the day and night, and as they were very rarely molested, exceedingly tame and unsuspicious.

Dr. Cooper speaks of finding birds of this species common at Puget Sound at all seasons of the year; and the same statement is made by Dr. Suckley. They appear about San Francisco only from September to May; and do not seem to migrate as far south as San Diego, although Dr. Cooper met with some at San Pedro, late in May, in their immature plumage. They were almost constantly on the wing, diving actively for fish, and were rather shy. Their notes consisted of sharp, but rather faint, squeaks. They are considered good eating.

This Gull occurs in small numbers in spring and fall in Southern Wisconsin, on Lake Koskonong, where examples are each season procured by Professor Kumlien, who writes me that this is the most common Gull of Southern Wisconsin — arriving there in April, when the young grass begins to start, passing northward in large scattered flocks, flying leisurely and low, as if they intended carefully to examine the country they pass over. These are all old ones in their best spring plumage. The immature young birds come in May, and are not uncommon in the lake in June;

and in some summers single immature birds may be seen throughout the season; no old ones are seen in summer. Specimens have been secured in the fall as late as November 7; these vary greatly in size, differing in length from twelve inches to fourteen and one half.

Audubon met with this Gull in the neighborhood of Cincinnati in August, 1819. After the female had been shot, another bird, evidently her mate, alighted immediately by her side to share her fate. Audubon afterward met with the same species on the Mississippi. In May, 1833, he observed this bird in great numbers in the Passamaquoddy, at Eastport. At low water they covered all the sand and mud bars in the neighborhood. They were very gentle, scarcely heeding his near presence; and his son shot seventeen at a single discharge of his double-barrelled gun. They were all young birds of the preceding year. There were no indications in either sex that they would probably breed that season. He found their stomachs filled with coleopterous insects which they had caught on the wing or picked up from the water. On the 24th of August, 1831, he shot ten others in the same locality. In their stomachs were shrimps and small fish. None were observed by Audubon in any part of the Gulf of St. Lawrence, on the coast of Labrador, or of Newfoundland. In the winter he found these Gulls common in the harbor of Charleston; but never saw any at that season about the mouths of the Mississippi. The flight of this bird he describes as being light, elevated, and rapid, more resembling that of Terns than is usually the case with Gulls. Audubon, as well as Yarrell, refers this bird to Greenland; but Professor Reinhardt thinks this reference incorrect.

Individuals of this species have been shot in various parts of Europe. One was taken near Belfast in 1848, and another was shot on the coast. In 1851 one was shot on Loch Lomond, in Scotland, and another on a lake in the North of England; and since that time several others have been taken in that district.

Mr. Donald Gunn found a few of this species breeding in the marshes of Swan Creek, not far from Shoal Lake, in company with the Franklin Gull.

Mr. Dall found these birds not uncommon in the marshes near the Yukon, but rare near the main river. They were most numerous on the Kaigul River, where they were breeding, not far from Nulato. Their eggs have been obtained near Fort Yukon; and the birds themselves are not very rare at Sitka, where Bischoff obtained several specimens.

Mr. MacFarlane found this species breeding in the wooded regions in the neighborhood of Fort Anderson. All the nests were placed either in bushes or on trees, at various heights from the ground — none less than four feet, and others from fifteen to twenty feet. One, found June 23, 1864, was on a tree and at a height of from twelve to fourteen feet; it was between two small ponds of water about a hundred feet from either. The eggs were fresh, indicating that this pair must have nested unusually late. Another nest, found on the following day, was on the dry branch of a pine-tree, and was about ten feet from the ground. There were no sticks in this nest, but it was composed of dark velvety pine-leaves and fine down. He mentions meeting with this Gull in that season much more frequently on his line of travel than on any other occasion; while it was much later than usual in nesting.

Mr. Kennicott found this Gull nesting in the neighborhood of Fort Yukon, and describes the nest as being of about the size of that of *Zenaidura carolinensis*, but the cavity is rather deeper. It was placed on the side-branch of a green spruce, several feet from the trunk, and about twenty feet from the ground, near a lake. Mr. Kennicott saw several nests near this one, all alike and in similar positions, except that some were not over ten feet from the ground, and were on smaller trees; but all were on spruce-trees. One nest which he examined contained three young birds of a dirty yellowish color, thickly spotted with dark brown. He saw between twenty-five and fifty Gulls about that breeding-place, but he found only a few of their nests. These birds were said by the Indians always to breed in similar situations.

In regard to twenty-two other nests described by Mr. MacFarlane, we gather that the usual maximum number of eggs in a nest is three — very rarely four; that all are placed in elevated situations, on high stumps, or bushes, or trees; that the nests are made of sticks, and lined with hay and other soft substances; and that the parents are fearless when they have young, flying about in close proximity, and screaming vehemently. The nests were found with eggs from June 10 to the 10th of July; and in some cases mosses and lichens from the pines and spruces had been largely used in their construction. They were usually placed flat on horizontal branches at some distance from the trunk. The eggs procured by Mr. MacFarlane vary in length from 1.90 to 2.05 inches, and in breadth from 1.35 to 1.45. Their ground-color is a grayish olive, passing into a greenish tint; while the markings consist of small spots of clove-brown, and are chiefly gathered around the larger end of the egg.

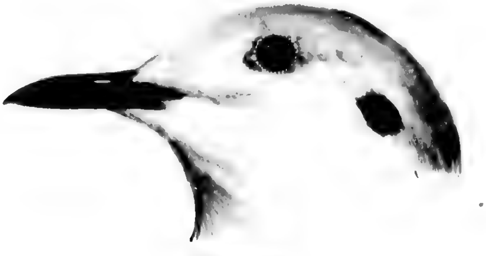
Specimens of this Gull and of its eggs were also procured at Fort Resolution, on the Yukon; at Fort Simpson, at Big Island, at Fort Rae, and at Peel's River Fort; at Fort Good Hope, Fort Anderson, on the Lower Anderson; and at various other points.

Larus minutus.

LITTLE GULL.

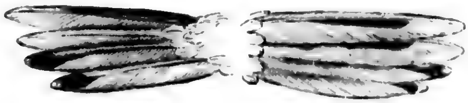
Larus albus, Scop. Ann. I. Hist. Nat. 1769, 106 (not of Gunn., 1767).
Larus minutus, Pall. Reise, Russ. Reichs, III. App. no. 35 (1776); Zoog. Rosso-As. II. 1826, 331. — Gmel. S. N. I. ii. 1788, 595. — Saunders, P. Z. S. 1878, 206.
Chroicocephalus minutus, Eyton, Cat. Brit. B. 1836, 61.
Larus atricilloides, Falk, Itin. III. p. 355, t. 24 (fide Gmel. S. N. I. ii. 1788, 601).
Larus d'Orbignyi, Audouin, Hist. Nat. de l'Egypte, 1825, pl. 9, fig. 3, Expl. p. 271.
Larus nigrotis, Less. Traité, II. 1831, 619.

Sp. Char. *Adult, in summer:* Head and extreme upper part of the neck uniform deep black; middle and lower part of the neck (all round), entire lower parts, upper tail-coverts, tail, and ends of the remiges (broadly) snow-white. Mantle, including remiges, except their ends, delicate pale pearl-blue. "Bill blackish red, gape dark red: legs bright vermilion or coral; iris deep brown" (Sharpe & Dresser). *Adult, in winter:* Similar, but head and neck white, the occiput washed with brownish gray, and the auricular region marked by a spot of dusky black. "Feet yellowish red" (Sharpe & Dresser). *Young, first plumage:* Forehead, lores, cheeks, entire lower parts,



Winter adult.

upper tail-coverts, and greater portion of the tail, pure white; occiput, auricular region, lower part of the nape, lesser and middle wing-coverts, scapulars, tertials, and terminal third of the tail (except lateral feathers) blackish fuliginous, the feathers (except on head and neck) bordered terminally with white or pale buff; greater wing-coverts and secondaries delicate pale pearl-blue;



primaries with outer webs mostly blackish (more slaty basally), the inner webs mostly white, except next the shaft and toward ends; primary-coverts uniform black. "Bill horn-black; feet flesh-colored."[1]

Wing, about 8.75–9.00 inches; tail, 4.30; culmen, .90; tarsus, 1.00; middle toe, .90.

The claim of this bird to be included in the fauna of North America rests upon somewhat questionable grounds. Richardson states that a single individual of this species was obtained on Sir John Franklin's first expedition to the Arctic Regions, and that this specimen was a young bird in its first year. According to Major Wedderburn, this species is an occasional winter visitant in Bermuda, occurring there only in midwinter. Major Wedderburn procured a specimen on the 22d of January, 1849, during a strong northerly gale, and another one was killed in the following month.

This Gull was noticed, and a specimen obtained, on the western coast of Mexico by Colonel Grayson, in the neighborhood of Mazatlan. He states that a few individuals were seen, and that specimens were procured in a fresh-water lagoon near the sea-shore, March 27, 1868. He did not meet with any others afterward.

According to Wheelwright, this species breeds in Gotland, but is not known to do so in any other part of Scandinavia. It is far more common around Novaya Ladoga and Archangel in Russia. Its habits are said greatly to resemble those of the *Larus ridibundus* of Europe; and its eggs are described by Mr. Wheelwright as being of much the same shape and color, but smaller than those of that bird, and measuring 1.66 inches by 1.25.

According to Yarrell, this species is only a winter visitant to Great Britain, where, though not abundant it is of by no means infrequent occurrence. He mentions twenty-three instances in which the time and place of capture of this Gull have been put on record in various parts of Ireland, England, and Scotland, stating that in nearly all these the birds were in immature plumage. In only one or two instances have the individuals been in the adult plumage, and these were taken in Ireland.

The egg of the *L. minutus*, as figured by Mr. Hewitson, is 1.63 inches in length, and 1.25 in breadth; the ground-color is olive-brown, and this is spotted and blotched with two shades of reddish brown.

Mr. Temminck killed two specimens of this Gull and procured several others in Holland, and Messrs. Necker and Schinz record five instances of its having been taken about the lakes of Switzerland. Savi includes it among the birds of Italy; and it is said to be found every winter on the shores of the Adriatic, the Mediterranean, and also on the Caspian Sea.

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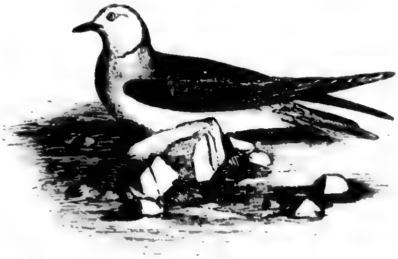
[1] The fresh colors are given by Macgillivray as follows: "*Adult, in winter:* Bill and iris blackish brown; feet of a very bright vermilion. *Adult, in summer:* Bill of a very deep lake-red, iris deep brown; feet crimson. *Young:* Bill blackish brown; feet livid flesh-color."

According to Temminck it feeds on insects and worms; and on several occasions where it was shot in Great Britain it was found in company with different species of Terns.

GENUS **RHODOSTETHIA**, MACGILLIVRAY.

Rossia, BONAP. Comp. List, 1838, 62 (type, *Larus roseus*, MACGILL.; not of OWEN, 1838).
Rhodostethia, MACGILL. Man. Brit. Orn. II. 1842, 253 (same type).

GEN. CHAR. "Body moderate; neck rather short; head ovate; bill short, rather slender; upper mandible with its dorsal outline nearly straight for half its length, arcuate-decurvate toward the end; lower mandible with the intercrural space narrow, the knot slight, the dorsal line concave, the tip narrow; legs short; tibiæ bare for a very short space; tarsus rather stout, anteriorly scutellate, rough behind; first toe short, with a large curved claw; anterior toes moderate, with their webs entire; claws rather large, arched, compressed, acute; plumage soft and full; wings long, rather narrow, pointed; tail cuneate, of twelve feathers, of which the central are much larger than the lateral" (MACGILLIVRAY).


R. rosea, summer adult.

A single species only is known, this being one of the rarest of the family; no specimen having until very recently come to any American collection.

Rhodostethia rosea.

ROSS'S GULL; WEDGE-TAILED GULL.

Larus roseus, MACGILL. Mem. Wern. Soc. V. 1824, 249. — JARD. & SELBY, Illustr. Orn. 1828, pl. 14.
Larus (*Rhodostethia*) *roseus*, BRUCH, J. f. O. 1853, 106.
Rhodostethia rosea, LAWR. in Baird's B. N. Am. 1858, 856. — BAIRD, Cat. N. Am. B. 1859, no. 678. — COUES, Pr. Ac. Nat. Sci. Philad. 1862, 311; Key, 1872, 316; Check List, 1873, no. 557; 2d ed. 1882, no. 789; B. N. W. 1874, 659. — SAUNDERS, Ibis, 1875, 484; P. Z. S. 1878, 208. — RIDGW. Nom. N. Am. B. 1881, no. 676.
Larus Rossii, RICH. App. Parry's 2d Voy. 1825, 359 (Melville Peninsula); F. B. A. II. 1831, 427. — NUTT. Man. II. 1834, 295. — AUD. Orn. Biog. V. 1839, 324; Synop. 1839, 323; B. Am. VII. 1844, 130.
Rhodostethia Rossii, MACGILL. Man. Orn. II. 1842, 253.

HAB. Region of Melville Peninsula, chiefly. Disco Bay; Heligoland; Faröes; Yorkshire, England; Point Barrow, Alaska, and Arctic Ocean north of Siberia;[1] Kamtschatka?

SP. CHAR. *Adult, in summer:* "*Color.* Scapulars, interscapulars, and both surfaces of the wings clear pearl-gray; outer web of the first quill blackish brown to its tip, which is gray; tips of the scapulars and lesser quills whitish; some small feathers near the eye and a collar round the middle of the neck pitch-black, rest of the plumage white; the neck above and the whole under plumage deeply tinged with peach-blossom red in recent specimens. Bill black; its rictus and the edges of the eyelids reddish orange; legs and feet vermilion-red; nails blackish.

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[1] For full list of the specimens (eleven in number) known to exist in collections to that date, see the "Ibis," 1875, p. 487.

"*Form.* Bill slender, weak, with a scarcely perceptible salient angle beneath; the upper mandible slightly arched and compressed toward the point; the commissure slightly curved at the tip. Wings an inch longer than the decidedly cuneiform tail; the central feathers of which are an inch longer than the outer ones. Tarsi rather stout; the thumb very distinct, armed with a nail as large as that of the outer toe.

"*Dimensions.* Length, 14.00 inches; wing, 10.50; tail, 5.50; bill above, .75, along gape, 1.25; tarsus, $1\frac{1}{12}$" (RICHARDSON, Faun. Bor. Am. II. 427).

Adult male, in winter (No. 87230, U. S. Nat. Mus., lat. 71° 50′ N., Arctic Ocean, north of Siberia, Oct. 7, 1879; R. L. NEWCOMB): Head, neck, and lower parts pure white, the pileum tinged with pale pearl-gray, the breast and most of other lower parts tinged with a very fine delicate rose-pink; no trace of black collar, but a distinct blackish patch or bar immediately in front of eye. Mantle and wings delicate pale pearl-gray, the secondaries very broadly tipped with pinkish white, the two inner primaries becoming gradually white terminally, and the outer web of the outer primary chiefly black. Lower part of rump, upper tail-coverts, and tail white, faintly tinged with delicate rose-pink. Bill black; iris brown; legs and feet pale brownish in dried skin.[1] Wing, 10.00 inches; tail, 4.50, the lateral feathers .75 shorter; culmen, .75; tarsus, 1.25; middle toe, 1.00.

Young male, in second summer (No. 87232, U. S. Nat. Mus., Arctic Ocean, north of Siberia, June 23; R. L. NEWCOMB): Head, neck, lower parts, lower part of rump, and upper tail-coverts pale, delicate rose-pink, this deepest beneath the surface of the feathers, the head and neck, except underneath, nearly pure white; upper part of neck encircled by a narrow black collar, broadest on the throat, only the tips of the feathers being black. Mantle and wings delicate pale pearl-gray, the lesser and middle wing-coverts dusky black on the surface (only the concealed portion being pearl-gray); inner secondaries, primary coverts, alulæ, and adjacent small feathers, with three outer primaries, blackish dusky, the inner webs of the latter, however, with the marginal half pearl-gray; remaining primaries pearl-gray, becoming white on the innermost quills, all of them broadly tipped with black; under surface of wing pale pearl-gray, like the mantle. Tail white, the third, fourth, and fifth feathers broadly tipped with black (this .75 of an inch in extent on fifth or next to the middle feather). Bill black; iris brown; legs and feet bright red, claws black. Wing, about 9.75 (quills much abraded) inches; tail, 4.80, the lateral feathers 1.50 shorter; culmen, .70; tarsus, 1.20; middle toe, 1.00.

Another young male in second summer, also collected by Mr. Newcomb (No. 87231, June 30, 1880), differs in having the rosy tint almost entirely absent, the black necklace much less distinct, and the tail wholly white. It measures: Wing, 9.50 inches; tail, 5.10, the lateral feathers 1.20 shorter; culmen, .65; tarsus, 1.25; middle toe, 1.05.

Young, in first plumage (No. 81224, St. Michael's, Alaska, Oct. 10, 1879; E. W. NELSON): General color of pileum, nape, and mantle very pale pearl-gray, but this only on the surface, all the underlying portion of the feathers being pure white; all the parts described heavily clouded with dark fuliginous, or blackish dusky, there being many feathers with the tip very broadly of this color; these dark markings prevail on the upper portion of the rump, where the feathers have dull buffy tips. Lower part of rump, upper tail-coverts, and greater part of tail immaculate pure white; middle pair of tail-feathers with the end sooty-black for about .85 of an inch, the next feather on each side black for a much less distance, the third with merely a slight mottling of dusky at the extreme tip. Lesser and middle wing-coverts, tertials, and most of the scapulars dark sooty or brownish black, each feather distinctly bordered terminally with pale grayish buff; greater wing-coverts immaculate, very pale pearl-gray, fading gradually into white terminally; secondaries and two inner primaries pure white; next two primaries with pure white inner webs and shafts, the outer webs very pale pearl-gray, the first quill having the inner web narrowly margined at end with black, the next with a somewhat oblong spot of black near end of each web; next two quills with inner web bluish white, the outer web pearl-gray, both very broadly tipped with black, and the shaft dusky; next quill similar, but with the central portion grayish dusky, forming a longitudinal lanceolate stripe, divided medially by the shaft; three outer quills with outer webs wholly blackish, and the inner web with a broad stripe of the same next the shaft; alulæ, carpal region, and primary coverts plain sooty black, the latter narrowly tipped with pale grayish buff. Lateral and under sides of head and neck white, with rather indistinct transverse bars of dusky, except on chin and throat; a dusky suffusion immediately before the eye. Lower parts, from jugulum back, including axillars, entirely immaculate pure white; lining of wing and under surface of primaries light silvery gray. Bill black, brownish basally; "iris hazel; legs and feet dull fleshy purple" (Nelson, MS.). Wing, 9.55 inches; tail, 4.00, the lateral feathers .70 shorter; culmen, .65; tarsus, 1.25; middle toe, 1.00.

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[1] Professor J. Murdoch has kindly furnished us with the following description of the fresh colors of an adult male in winter plumage obtained by him at Point Barrow, Alaska: "Feet terra-cotta red, with brown webs and knuckles. White everywhere tinged with red, except rectrices; rose-color somewhat blotchy and approaching salmon-color, especially on crissum. Mantle pearly blue, extending as mottlings to the back of the head. Edge of wing, from shoulder to wrist, bright rosy."

Herr J. C. H. Fischer, in "Kröyer's Natural History Journal" for 1864, records the occurrence of this extremely rare Gull in the Faröe Islands. It is there spoken of as the "Cuneate-tailed Gull." The example in this instance had been taken in Suderoe in February, 1863; it is now in a private collection in Copenhagen. The "Ibis" (1865, p. 104) makes the statement that only five other examples of this species are known to exist. One of these, obtained June, 1823, on Melville Peninsula, is in the Edinburgh Museum; another, from the same place, is now in the Derby Museum of Liverpool; the third specimen, from Kamtschatka, is in the Museum at Mainz; the fourth, in a private collection in England, is said to have been killed in Yorkshire; and the other, killed on the Island of Heligoland, is in the collection of Herr Gätke.

Richardson states that two specimens were killed on the coast of Melville Peninsula, during Sir Edward Parry's second voyage. Ross, in his Zoological Appendix to Parry's narrative of his boat voyage toward the Pole, states that several individuals were seen during the journey over the ice north of Spitzbergen, and that Lieutenant Forster also found it in Waygatsch Straits, which is presumed to be one of its breeding-places. In regard to any of its specific peculiarities of habits, or the places of its retreat in the winter, no information has been obtained.

Mr. Charlesworth published a paper in the first part of the first volume of the "Proceedings of the Yorkshire Philosophical Society," giving the particulars of the capture of this example in Yorkshire. It was killed, in 1847, by a Mr. Horner, in February, in a ploughed field near the hamlet of Milford. Its flight is said to have been similar to that of any other Gull, and the bird did not appear at all shy.

Mr. Macgillivray states, in his edition of 1842, that it has once occurred in Ireland; but the statement is unsupported by evidence, and Mr. Yarrell thinks that Ireland is wrongly printed instead of Iceland. It is not accepted as a bird of Ireland either by Thompson or Walter.

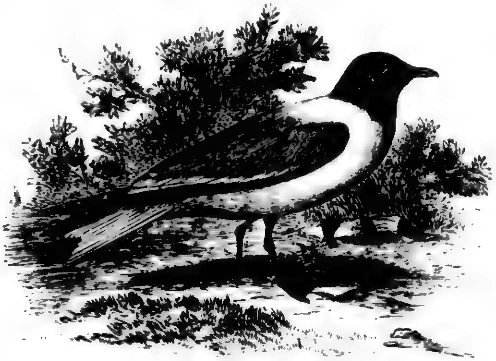
It has not been met with in Smith's Sound by any of the exploring expeditions. Its entire absence, so far as is known, from Spitzbergen, Nova Zembla, Franz-Josef Land, and Siberia, and its not having been seen by any of the Franklin search expeditions that have entered Lancaster Sound or skirted the northern shores of America from Behring's Straits, and its not having been noticed in Alaska, has led Captain Fielden to conclude that it must be a bird of limited distribution, and that it probably has its breeding-haunts north of Hudson's Bay.

GENUS **XEMA**, LEACH.

Xema, "LEACH," Ross's Voy. App. 1819, p. lvii (type, *Larus Sabinei*, SAB.).
? *Creagrus*, BONAP. Naum. 1854, 213 (type, *Larus furcatus*, NEBOUX).

CHAR. Size small or medium; tail forked; tarsus equal to or rather shorter than the middle toe, with claw; adult with a dark hood, the plumage otherwise pearl-gray above and white beneath.

It is very doubtful whether the *Larus furcatus*, NEBOUX, should be referred to the genus *Xema*. Mr. Salvin, who has had the opportunity of examining a specimen, remarks as follows on this question: "*Creagrus*, as a genus, differs but slightly from *Xema*, both having a deeply forked tail. The former, however, is a more robust form, and has the nostril situated rather nearer the point of the bill. In coloration, *Creagrus* wants the black ring which encircles the hood of *Xema*. I doubt whether in a well-considered classification of the *Laridæ* the two genera could be maintained as distinct" (Trans. Zool. Soc. Lond. IX. 1876, p. 506). It might also have been added, that the tail of *Creagrus* is much more deeply forked, and that the coloration of the bill and feet is radically different.



X. Sabini, summer adult.

Assuming, however, that they may be referred to the same genus, their differential characters may be stated as follows: —

1. **X. Sabini.** Wing, 11.00 inches or less; tail slightly forked; hood plumbeous, bounded below by a well-defined black collar; bill black, tipped with yellow; feet black. *Hab.* Circumpolar Regions.
2. **X. furcata.** Wing, 16.00 inches or more; tail deeply forked; hood sooty black, with a white frontal bar, but no dark collar; bill and feet red. *Hab.* Galapagos; coast of Peru; coast of California (?).

Xema Sabini.

THE FORK-TAILED GULL.

Larus Sabini, J. SABINE, Tr. Linn. Soc. XII. 1818, 520, pl. 29.
Larus Sabinii, RICH. App. Parry's 2d Voy. 1825, 360. — SW. & RICH. F. B. A. II. 1831, 428 — NUTT. Man. II. 1834, 295. — AUD. Orn. Biog. III. 1835, 561, pl. 285; Synop. 1839, 323; B. Am. VII. 1844, 127, pl. 441.
Xema Sabini, EDW. & BEVERLEY, App. Ross's Voy. Baf. Bay, 4to ed. 1819, lvii.
Larus (Xema) Sabini, BRUCH, J. f. O. 1853, 103.

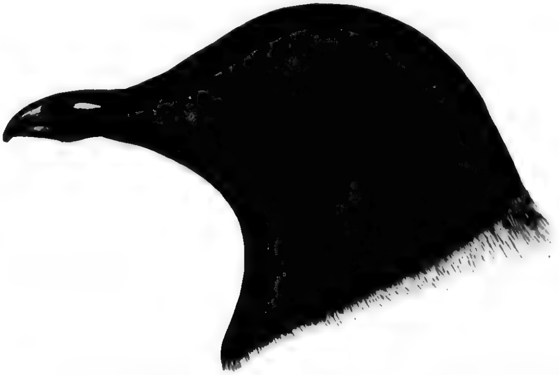
Xema Sabinii, LAWR. in Baird's B. N. Am. 1858, 857. — BAIRD, Cat. N. Am. B. 1859, no. 680. — SAUNDERS, P. Z. S. 1878, 209. — COUES, 2d Check List, 1882, no. 790.

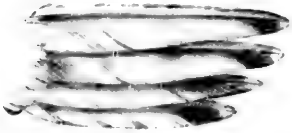
Xema Sabinei, COUES, Pr. Philad. Acad. 1862, 311 ; Key, 1872, 317 ; Check List, 1873, no. 558 ; B. N. W. 1874, 66. — RIDGW. Nom. N. Am. B. 1881, no. 677.

Xema collaris, "SCHREIBERS," ROSS, in App. Ross's Voy. Baf. Bay, II. 8vo ed. 1819, 164 (nec SCHREIBERS, = *Rhodostethia rosea !* Cf. SAUNDERS, P. Z. S. 1878, p. 209).

HAB. Circumpolar Regions ; in winter migrating south, in America, to Maine, New York, the Great Lakes, and Great Salt Lake, Utah. Very abundant in Alaska. Bermudas, one instance (SAUNDERS). Macabi Island, coast of Peru, lat. 8° S. (one specimen, *fide* SAUNDERS, P. Z. S. 1878, p. 210).

SP. CHAR. *Adult, in summer :* Head and upper part of the neck plumbeous, bounded below by a well-defined collar of black, widest behind ; lower part of the neck, entire lower parts, tail, upper tail-coverts, and lower part of rump snow-white, the lower parts faintly tinged with delicate rose-pink in some freshly killed specimens. Mantle deep bluish gray (nearly the same shade as in *Larus Franklini*), the secondaries pure white, becoming gradually pale grayish blue toward bases ; most of the exposed portion of the greater coverts also white, forming, together with the secondaries, a conspicuous longitudinal white stripe on the closed wing. Four outer primaries black, broadly tipped with white, the inner webs broadly margined with the same ; fifth quill with the greater part of the inner web, and about 1.75 inches of the terminal portion of the outer, white, the remainder black ; remaining quills white ; outer border of the wing, from the carpal joint back to the primary coverts, including the latter and the alulæ, uniform black. Bill black, tipped with yellow ; eyelids red ; iris brown ; "feet dull lead-color, claws black" (L. M. TURNER, MS.). *Adult in winter :* Similar to the summer plumage, but head and neck white, except occiput, nape, and auricular region, which are dull dusky plumbeous. *Young, first plumage :* Crown, nape, back, scapulars, wing-coverts, and rump brownish gray, each feather bordered terminally with light fulvous or pale grayish buff, this fulvous border preceded on the tertials, longer scapulars, etc., by a dusky internal sub-border ; greater wing-coverts and secondaries white, as in the adult ; primaries much as in the adult. Tail white, with a broad subterminal band of black, the tip narrowly white or pale fulvous ; upper tail-coverts and entire lower parts white. Bill dusky, brownish toward the base ; feet light brownish (in the skin).





Wing, about 10.75 inches ; culmen, 1.00 ; depth of bill through angle, .30 ; tarsus, 1.25 ; middle toe and claw, 1.25.

The Fork-tailed Gull is an almost exclusively Arctic species. It is found in the breeding-season in the extreme northern portions of America and Asia, but is of only occasional occurrence in Europe. So far as is now known, it breeds exclusively in North America and in portions of Asia. In the winter it wanders south of the Arctic Circle; but at all times the larger portion of the birds of this species remain in high northern latitudes, only a very small number wandering as far south as the United States.

This Gull is of occasional occurrence in New England, and is probably found there more frequently than the present scanty records would seem to indicate. One was shot in September, 1874, in Boston Harbor, and is now in the collection of Mr. William Brewster; and early in June, 1878, Mr. Boardman procured a fine example on the St. Croix. This gentleman had become aware that this species was present in that region every spring, but had never before been able to secure an example. He had often noticed it among the numerous Bonaparte Gulls, of which a "cartload" had to be sacrificed before the desired *Sabini* could be secured.

Mr. Howard Saunders, referring to its autumnal movements southward, mentions the procuring of many examples of this species on the British coast, and on that of the continent of Europe, as far south as Holstein and France; these were mostly immature birds. One adult was taken on the coast of Brittany, Aug. 25, 1872. In America he cites the range of this Gull as extending to New York on the east, and Great Salt Lake in the interior. In the Museum of the University of Michigan there is said to be an example procured near Tumbez, one of the Macabi Islands, on the coast of Peru, in latitude 8° south.

This species was first described by Sabine from specimens obtained by his brother, Colonel Edward, a member of the Northwest Expedition of 1818. The account of its capture is to the effect that this bird was seen and killed on the 25th of July, 1818, on a group of three rocky islands, each about a mile in diameter, on the west coast of Greenland, twenty miles from the mainland, in lat. 75° 29′ N. It was in company with Arctic Terns, both species breeding on those islands, and their nests being intermingled. This Gull was said to lay two eggs on the bare ground, which were hatched the last week in July. The young at first are mottled with brown, and of a dull yellow. The eggs are described as being an inch and a half in length, of regular shape, and not much pointed; the color is olive, blotched with brown. The parent birds flew with great impetuosity toward persons approaching their nest and young; and when one bird of a pair was killed, its mate, although frequently shot at, continued on the wing close to the spot where its dead mate lay. These birds appeared to get their food on the sea-beach, standing near the water's edge and picking up marine insects cast on the shore.

During the second Arctic voyage, a Gull of this species was seen in Prince Regent's Inlet; and afterward many specimens were obtained on Melville Peninsula. This bird has also been met with at Spitzbergen, Igloolik, Behring's Straits, Cape Garry, and Felix Harbor. The Eskimos informed Sir James C. Ross that it breeds in great numbers west of Neitgelli. It is said to arrive in high northern latitudes in June, and to move southward in August. When recently killed, its under plumage is of a delicate pink blush-color.

In the course of a voyage from Pictou, in Nova Scotia, to Hull, in England, Mr. Thomas Macullock saw great numbers of this species when more than a hundred miles off Newfoundland. They flew around the ship in company with an almost equal number of Ross's Gull.

This bird is mentioned by Reinhardt as being very rare in the Danish settlements of Greenland, and as breeding only to the north of Upernavik. Professor Blasius also describes it as occurring in Heligoland. According to Middendorff, Sabine's Gull is a bird of Siberia; and it is included in his list of those that penetrate to the farthest north. He also states ("Sib. Reise," p. 244) that this Gull appeared on the Taimyr River (lat. 73° 45′ N.) on the 5th of June; but soon left, and was not seen again until he reached the ponds in the Barrens (*tundras*) and the small alluvial islands in the river and lake of Taimyr, in about 74° north latitude; there it was common, breeding in company with the Arctic Tern. The same writer, quoted by Dresser, states that he found this bird breeding in Northern Siberia, and that on the 10th of July the eggs were much incubated. They were deposited in depressions in the moss, lined with dry grass-bents of the previous year, and there were two in each nest. On the 19th of July most of the young birds seen had only just been hatched out; but a few were of considerable size. On the 15th of August he saw full-grown, though not full-feathered, young. They dived with ease, while the parents were flying overhead — every now and then darting down, uttering a harsh note somewhat resembling that of *Turdus pilaris*. He found the crops of the old birds and the stomachs of the young filled with the larvæ of dipterous insects.

Richardson, in his "Journal of a Boat-voyage," refers to an island off Cape Dalhousie, on which he encamped, as being one of the breeding-places of this bird, and states that the eggs were deposited in hollows in the short and mossy turf.

Mr. Giraud mentions that a single individual of this species was shot at Raynor South, on Long Island, in July, 1837, and states that, so far as he was aware, this was the only one ever procured on the island.

Mr. J. A. Allen obtained a single specimen of Sabine's Gull at Salt Lake Valley in September, and one is said also to have been taken in Bermuda — shot by Colonel Drummond near St. George; but in this case there was no record of the date.

According to Yarrell, there are several instances on record of the shooting of this Gull in the British Islands. The first specimen, so far as known, was shot in Belfast Bay in September, 1822; the second, now in the Museum of the Royal Dublin Society, was shot in Dublin Bay by Mr. Wall. Both of these birds were in the plumage of the first autumn. Other specimens have since been obtained in Cambridgeshire, at Milford Haven, at Newhaven, near Dublin, and in several other places. Temminck mentions three instances of the occurrence of this species which had become known to him — one was a young bird on the coast of Holland; a second was killed on the Rhine; a third in France, not far from Rouen; and still another near Dunkirk.

Captain MacFarlane found this Gull breeding in the islands of the Arctic Ocean. He mentions that the under plumage of a male shot by him early in July was deeply tinged with crimson. The first nest found was by itself on an island near a small lake, and contained three eggs. In June, 1865, Mr. MacFarlane found a number of these birds breeding on the "large island" in Franklin Bay — a place often referred to in his notes as such, which, however, was ascertained not to be an island, but an extensive neck or point of land. The nests were on an islet in a small lake.

Mr. Dall mentions finding the Fork-tailed Gull abundant in the marshes about Pastolik and St. Michael's, where it breeds. He also states that this species is not rare at Plover Bay, in Eastern Siberia. Mr. Dall has never observed it far inland, in strictly fresh water, and is certain that it is not found at Nulato.

Mr. Bannister states that in the early part of July he observed large flocks of these birds in the Canal at St. Michael's, and that at about the same time two specimens were shot by Mr. Pease in the same locality. They did not observe this species at any other point near the redoubt. But Mr. E. Adams mentions ("Ibis," 1878) having met with this species at St. Michael's, where a few individuals made their appearance about the salt-marshes on the 7th of May, and a few pairs bred there. They were often feeding about the mud of the lakes, but he did not see any of them on the seashore. Their food consisted of worms and insects. They were very bold, dashing like the Kittiwakes at the head of any intruder upon their domain; at other times they were rather shy and wary.

Eggs of this species, procured on the Arctic coast by Mr. MacFarlane, exhibit the following measurements: 1.75 by 1.20 inches; 1.70 by 1.25; and 1.76 by 1.20. They are of nearly uniform appearance, size, and shape. Their ground-color is a deep olive-brown, varying to greenish in some, to a deeper olive in others, and spotted with markings of a deep sepia, with no obscure cloudings of slate or lilac.

Xema furcata.

THE SWALLOW-TAILED GULL.

Mouette à queue fourchue, Neboux, Rev. Zool. 1840, 290.

Larus furcatus, Neboux, Voy. "Vénus," Atlas, pl. x. (1846). — Prévost & Des Murs, Voy. "Vénus," V. Ois. 1855, 277.

Larus (Xema) furcatus, Bruch, J. f. O. 1853, 103.

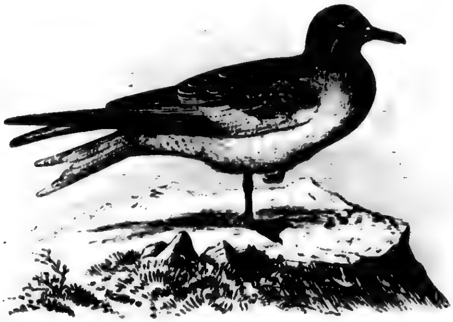
Xema furcatum, Coues, Key, 1872, 317; Check List, 1873, no. 559; Birds N. W. 1874, 661. — Saunders, P. Z. S. 1878, 210; 1882, 523, pl. 34 (adult and young; Peru).

Xema furcata, Coues, 2d Check List, 1882, no. 791.

Creagrus furcatus, Bonap. Naumannia, 1854, 213. — Lawr. in Baird's B. N. Am. 1858, 857. — Baird, Cat. N. Am. B. 1859, no. 679. — Salvin, Trans. Zool. Soc. IX. 1876, 506 (Galapagos). — Ridgw. Nom. N. Am. B. 1881, no. 678.

Hab. Coast of California?; Galapagos; Paracas Bay, Peru (Saunders).

Sp. Char. *Adult (summer plumage?)*: Above, cinereous; entire head, with anterior half of the neck, sooty black; frontal bar, exterior margin of the scapulars, under wing-coverts, tail, and entire lower parts, white; first to fourth quills, with the whole of the outer and the terminal portion of the inner webs, black, the third and fourth gray at the base; fifth and sixth gray exteriorly, black terminally; fourth, fifth, and sixth with a white apical bar. Bill and feet red. Total length, 23.00 inches; wing, 16.00; middle rectrices, 4.70; exterior rectrices, 8.00; tarsus, 1.90; middle toe, with claw, 2.00.[1]



X. furcata, summer adult.

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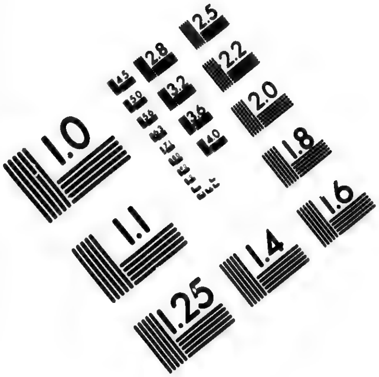
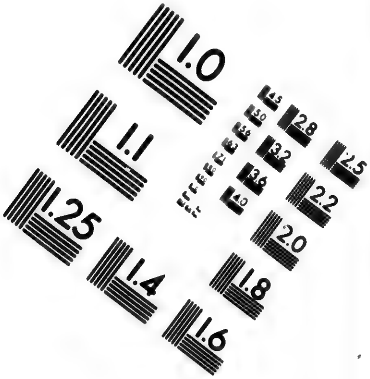
[1] Translation of Salvin's Latin diagnosis in Trans. Zool. Soc. Lond. IX. 1876, p. 506.





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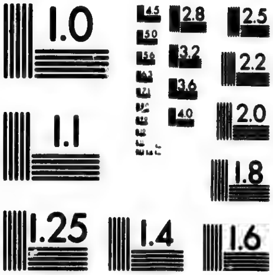

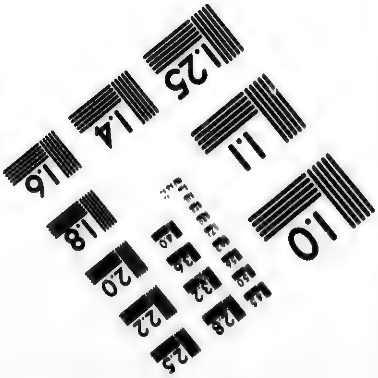

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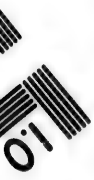
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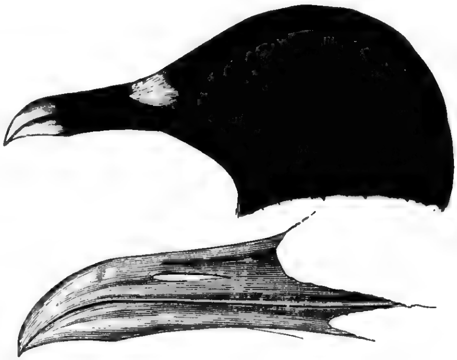
The first known example of the young of this excessively rare species has very recently been described by Mr. Saunders (Proc. Zool. Soc. Lond. 1882, pp. 523, 524, pl. 34), who gives the following information respecting the specimens known to date: —

"The third known example of this rarest of Gulls, the history of which may here be briefly recapitulated. The Paris Museum possesses one, in somewhat immature plumage, said to have been obtained by Dr. Neboux, of the French frigate 'Vénus,' at Monterey, Cal., in the month of November. The British Museum has an adult in full breeding-plumage obtained during the voyage of H.M. SS. 'Herald' and 'Pandora,' at Dalrymple Rock, Chatham Island, Galapagos Group, nearly on the equator, between the 11th and 16th of January. It is a medium-sized Gull, with long wings (16 inches), a dark slate-colored hood, and a forked tail; indeed were it not that the hood is separated from the base of the bill by a band of white feathers, and that there is no black neck-ring at the base of the hood, *Xema furcatum* might be described as a gigantic Sabine's Gull. In the young, now figured, the resemblance to the young of *Xema Sabinii* is very marked. The entire head is white, with dark markings in front of and surrounding the eyes, and a brown auricular patch as in most of the immature hooded Gulls; neck and mantle ashy brown, the tips of the feathers margined with white; upper wing-coverts and secondaries white; primaries 1-5 black, with greater part of inner web white, 6 and 7 white barred with dusky, 8-10 pure white. Tail much forked, the outer feathers nearly white, the others banded with brown and tipped with white; rump white, slightly mottled with brown. Under parts white. Bill horn-black; tarsi and feet livid brown. The bill is proportionately longer, slenderer, and more curved than in *X. Sabinii*, from which it also differs in having a considerable bare space between the base of the feathers and the nares. The first primary which shows the slightest tip of white is the 5th, and there is less white at the tips of the upper ones than in the young of *X. Sabinii*.



"The feathers are all quite fresh; and, reasoning from analogy, I should think that this example cannot have been more than three or four months old. Where, then, are the headquarters of this mysterious Gull? It would seem by this specimen that its breeding-time corresponds to that of the northern hemisphere, and that, like some other Gulls, it passes southward to escape the northern winter; but as yet nothing is known. It is, however, somewhat remarkable that American naturalists who have devoted so much attention to the exploration of the coast of the Pacific, from Vancouver Island down to Mexico, have discovered no trace of it; nor have repeated visits to the Galapagos produced more than the isolated adult specimen above noticed. Captain Markham's valuable acquisition has now made us acquainted with the first plumage of this extremely rare bird; and the proof of the existence of this long-lost species may be expected to awaken an interest which will probably in a few years lead to the discovery of its real habitat."

The Fork-tailed Gull was originally described from a specimen said to have been taken at sea off the coast of California. There has been no subsequent confirmation of the claim of this species to a place in the fauna of North America. Dr. Cooper writes me that he has never seen any individual answering to the description of this species along the Pacific coast of California, nor has it been obtained there by any one else. Nothing is known as to its distribution or its general habits. It is now positively ascertained that of the three specimens — all that have ever been procured

— one was certainly obtained in the Galapagos, and not within our limits; and as the expedition that procured the supposed Californian example visited the same group, Mr. Salvin is of the opinion that this was the locality from which both specimens came, and that this bird does not belong to the fauna of the United States.

Genus **STERNA**, Linnæus.

Sterna, Linn. S. N. ed. 10, I. 1758, 137, ed. 12, I. 1766, 227 (type, by elim., *Sterna hirundo*, Linn.).
Sternula, Boie, Isis, 1822, 563 (type, *Sterna minuta*, Linn.).
Thalasseus, Boie, Isis, 1822, 563 (type, *Sterna caspia*, Pall.).
Thalassea, Kaup, Sk. Entw. Eur. Thierw. 1829, 97 (type, *Sterna paradisca*, Brünn.).
Sylochelidon, Brehm, Vög. Deutschl. 1830, 767 (type, *Sterna caspia*, Linn.).
Actochelidon, Kaup, Sk. Ent. Eur. Thierw. 1829, 31 (type, *Sterna cantiaca*, Gmel.).
Gelochelidon, Brehm, Naturg. Vög. Deutschl. 1831, 774 (type, *G. meridionalis*, Brehm, *Sterna anglica*, Mont.).
Haliplana, Wagl. Isis, 1832, 1224 (type, *Sterna fuliginosa*, Gmel.).

Char. Size exceedingly variable, the form and colors less so; tail always decidedly forked, and toes almost fully webbed, but the webs concave, or "scalloped out," anteriorly.

Synopsis of North American Species.

A. Size medium (wing about 11.75–12.25 inches); tail emarginate; occipital feathers soft and blended; inner webs of primaries bicolored (a blackish stripe next the shaft, the inner border broadly white); bill wholly black, short and thick, its upper and lower outlines strongly convex, the depth through the base about one third the length of the culmen; pileum entirely black in summer, uniform ashy white in winter. (*Gelochelidon*, Brehm.)

1. **S. anglica.** Bill and feet black: above, pale pearl-blue, including the rump, upper tail-coverts, and tail; beneath, entirely white. Wing, 11.75–12.25 inches; tail, 5.50; culmen, 1.40; tarsus, 1.30; middle toe, 1.10. *Hab.* Eastern coast of North America, and various parts of the Old World.

B. Size very large (wing 15.00 inches or more); tail emarginate; occipital feathers soft and blended, not forming a crest; inner webs of primaries concolored (dusky grayish); adult, above, pale pearl-gray, beneath, white; hood wholly black in summer, wholly streaked or speckled with white in winter. (*Thalasseus*, Boie.)

2. **S. caspia.** Bill very robust (the depth through the base a little less than one third the length of the culmen), deep red. *Hab.* North America in general, and various parts of the Old World.

C. Size large or medium (wing 12.50–15.00 inches); tail deeply forked; occipital feathers pointed and somewhat lengthened, forming a short but distinct crest; inner webs of primaries bicolored (dusky in a well-defined stripe next the shaft, the inner edge broadly and abruptly white); adult, pale pearl-gray above, white beneath; pileum wholly black in spring, the forehead, lores, and centre of the crown white in breeding-season. (*Actochelidon*, Kaup.)

3. **S. maxima.** Bill stout (depth through the base much less than one third the length of the culmen), deep orange; wing, 14.00–15.00 inches. *Hab.* Coasts and inland waters of Middle and Southern North America, north to about 40°.

4. **S. elegans.** Bill very slender (depth through the base about one fifth the length of the culmen), deep orange-red; occipital feathers much elongated, and lower parts deeply tinged with peach-blossom pink. Wing, about 12.50 inches. *Hab.* Pacific coast of Middle America, north to California.

5. **S. sandvicensis.** Bill very slender, as in *S. elegans*, but deep black, tipped with yellow; occipital feathers less elongated, and lower parts without pink tinge. Wing, about 12.50 inches. *Hab.* Atlantic coast of North, and both coasts of Middle, America; Palæarctic Region.

D. Size small (wing less than 11.00 inches, and more than 8.00); tail excessively forked, the lateral rectrices attenuated;[1] occipital feathers soft, blended, not forming a crest; inner webs of primaries bicolored; adult pearl-blue above, white, pale pink, or grayish beneath; pileum wholly deep black in summer, except in *Trudeaui* (whole head white, with a lateral dusky bar) and *aleutica* (white frontal lunule). (*Sterna*, LINN.)

a. Pileum entirely white in summer.

6. **S. Trudeaui.** Bill black, tipped with yellowish; head white, with a dusky lateral bar; upper and lower parts pale pearl-gray; rump, tail-coverts, and tail white, slightly silvered. Wing, 9.70–10.60 inches; tail, 4.60–6.00; culmen, 1.50–1.70; tarsus, .92–.96; middle toe, .75–.80. *Hab.* Coasts of South America, and casual along the Atlantic coast of the United States.

b. Pileum entirely black in summer.

7. **S. Forsteri.** Bill dull orange, dusky at the tip; feet rich orange-red (in life); outer web of lateral rectrices pure white throughout, the inner web usually dusky or grayish toward the end, in more or less marked contrast;[2] lower parts entirely white. Wing, 9.50–10.30 inches; tail, 5.00–7.70; culmen, 1.50–1.65; tarsus, .90–.99; middle toe, 1.05–1.15. *Hab.* Temperate North America in general, south in winter to Brazil.

8. **S. hirundo.** Bill vermilion, the tip dusky; feet rich vermilion (in life); outer web of lateral rectrices grayish or dusky, the inner pure white throughout, in abrupt contrast; lower parts usually pale grayish, rarely nearly white. Wing, 9.75–11.75 inches; tail, 5.00–7.00; culmen, 1.25–1.50; tarsus, .66–.87; middle toe, .75. *Hab.* Eastern North America; Palæarctic Region.

9. **S. paradisæa.** Bill rich carmine, with or without black tip; feet intense red (in life); outer rectrices as in *fluviatilis*, but usually more elongated; lower parts deep, somewhat smoky, pearl-gray, almost as dark as the upper parts. Wing, 10.00–10.75 inches; tail, 6.50–8.50; culmen, 1.08–1.40; tarsus, .55–.65; middle toe, with claw, .80–.85. *Hab.* Northern parts of northern hemisphere.

10. **S. Dougalli.** Bill black, usually reddish basally; feet bright red (in life); lateral rectrices wholly white, sometimes very faintly silvered; lower parts delicate peach-blossom-pink in life, fading to pinkish white or even pure white in the dried skin. Wing, 9.25–9.75 inches; tail, 7.25–7.75; culmen, 1.50; tarsus, .85; middle toe, .75. *Hab.* Atlantic coast of North America; West Indies; Palæarctic Region.

c. Forehead white, this color extending back along the sides of the crown to the eyes.

11. **S. aleutica.** Bill and feet wholly deep black; upper parts pearly plumbeous, the upper tail-coverts and tail abruptly pure white; lower parts paler plumbeous, fading into white on the chin and crissum. Wing, 9.75–10.75 inches; tail, 6.50–7.00; culmen, 1.25–1.40; tarsus, .60–.75; middle toe, .80–.85. *Hab.* Coasts and islands of Alaska.

E. Size extremely small (wing less than 8.00 inches); tail moderately forked, the lateral feathers not much attenuated; occipital feathers soft and blended. Adult pale pearl-blue above, the rump and tail sometimes white; white beneath; the pileum with a white frontal lunule, as in *Sterna aleutica* and in *Haliplana*. (*Sternula*, BOIE.)

12. **S. antillarum.** Bill yellow, usually tipped with black; upper parts entirely pale pearl-blue, including the tail; lower parts white; wing less than 7.00 inches; culmen less than 1.25; the bill usually black-tipped. *Hab.* Warm-temperate North America and Middle America; West Indies.

F. Size small (wing about 10.50 to 12.00 inches); bill very straight, the culmen sometimes even slightly depressed in the middle portion; nasal groove long and deep, the nostrils more anterior than in *Sterna;* tail deeply forked, but the feathers relatively broader and stiffer; color, dusky above, sometimes interrupted by a whitish nuchal band; beneath, entirely white; pileum black, with a white frontal lunule as in *Sternula* and in *Sterna aleutica*. (*Haliplana*, WAGLER.)

13. **S. fuliginosa.** Above, entirely brownish black, uninterrupted on the nape; wing, about 12.00 inches. *Hab.* Sea-coasts throughout the warmer parts of the world; in North

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[1] When fully developed, and not abraded.

[2] This latter feature by no means constant, however.

America, known only from the Gulf and South Atlantic coasts, north, casually, to Pennsylvania.

14. **S. anæstheta.** Above, sooty plumbeous, lightening gradually on the upper back into ashy, this gradually fading into whitish on the nape, the black of the pileum being strongly contrasted. Wing, about 10.50 inches. *Hab.* Sea-coasts throughout the warmer parts of the world; casual on the coast of Florida.

Sterna anglica.

THE GULL-BILLED TERN.

Sterna anglica, MONTAGUE, Orn. Dict. Suppl. 1813. — NUTT. Man. II. 1834, 269. — AUD. Orn. Biog. V. 1839, 127, pl. 410; Synop. 1839, 316; B. Am. VII. 1844, 81, pl. 430. — COUES, Key, 1872, 319; Check List, 1873, no. 560; 2d ed. 1882, no. 792. — RIDGW. Nom. N. Am. B. 1881, no. 679.

Gelochelidon anglica, BONAP. Comp. List, 1838, 61. — COUES, Pr. Ac. Nat. Sci. Philad. 1862, 536 (critical).

Sterna (Gelochelidon) anglica, COUES, B. N. W. 1874, 664.

Sterna aranea, WILS. Am. Orn. VIII. 1814, 143, pl. 72, f. 6. — LAWR. in Baird's B. N. Am. 1858, 859. — BAIRD, Cat. N. Am. B. 1859, no. 681.

Sterna risoria, BREHM, Lehrb. 1823, 683; Beitr. III. 650.

? *Sterna macrotarsa*, GOULD, Proc. Zool. Soc. Lond. pt. v. 1837, 26; B. Austr. Suppl., pl.

Sterna affinis, HORSF. (*fide* BLAS.)

Gelochelidon palustris, MACGILL. Man. II. 1842, 237.

Gelochelidon balthica, agraria, meridionalis, BREHM, Vög. Deutschl. 1831, 772, 773, 774.

HAB. Nearly cosmopolitan, but in North America confined to the Eastern Province, and rare away from the coast; the greater part of tropical America, south to Brazil; both coasts of Central America; Bermuda?

SP. CHAR. *Adult, in summer:* Pileum and nape deep black; upper parts, including the rump, upper tail-coverts, and tail, delicate pale pearl-gray, the primaries more hoary, and usually darker; inner webs of primaries ash-gray, with a broad white space from the edge more than half way to the shaft, but not extending to the ends of the quills. Rest of the plumage pure white. Bill wholly deep black; interior of mouth flesh-color; iris dark brown; legs and feet dark walnut-brown, the soles pale pinkish brown; claws black. *Adult, in winter:* Similar, but whole head and neck white, the nape tinged with grayish, the auriculars darker grayish, as is also a crescentic space immediately in front of the eyes. *Young, first plumage:* Above, pale pearl-blue, the feathers more or less tipped with light clay-color, this sometimes almost uniform over the back and scapulars, where the feathers are bluish only beneath the surface; a blackish crescentic spot immediately in front of the eye, and a dusky grayish suffusion on the auriculars, forming a more or less distinct postocular stripe. Lower parts entirely pure white. Rump, upper tail-coverts, tail, and

wing-coverts nearly uniform pale pearl-blue; remiges deeper silvery gray, the secondaries and inner primaries tipped with white; rectrices darker subterminally, and tipped with white or pale ochraceous-buff. Pileum, back, and scapulars sometimes streaked with dusky, oftener immaculate. Bill dusky brownish, the mandible dull orange-brown, except terminally; legs and feet varying from dull reddish brown to dusky brown, the soles more reddish. *Downy young:* Above, light grayish buff, with several large and tolerably well-defined dusky spots on the hind half of the head, most distinct on the latero-occipital region; a distinct longitudinal stripe of dusky down each side of the lower nape and upper back; wings, rump, and flanks, with large, rather distinct, spots of dusky. Lower parts white, the sides of the throat faintly tinged with grayish. Bill dull brownish, the mandible more orange; legs and feet dull brownish orange.

Total length, about 13.00 to 14.50 inches; extent, 33.00 to 35.00; wing, 11.75–12.25; tail, 5.50; depth of fork, 1.50–1.75; culmen, 1.40; depth of bill through base, .45; tarsus, 1.30; middle toe, with claw, 1.10.

Much light has been thrown within a few years upon the distribution of the Gull-billed Tern — Marsh Tern it is hardly entitled to be called. Recent records show it to be much more cosmopolitan than was formerly supposed. It is characteristic of no particular region, but breeds alike in the Indian Ocean and in the Gulf of Mexico, in Denmark, and in Patagonia. Its range — as given by Mr. Howard Saunders — is from Western Europe to the China Seas, throughout India, Ceylon, and the Malay Region, to Australia, and along the east coast of America as far as Patagonia. It is recorded by Salvin as being found on the Pacific coast of Guatemala; but the statement of M. F. Germain in regard to its abundance on the coast of Chili ("Proc. Boston Nat. Hist. Soc." VII. 314) lacks confirmation. North of Western Mexico it is unknown on the Pacific coast; nor has it been recorded from South Africa. It was first described by Montagu from an example procured in England, and hence its inappropriate specific name, *anglica;* but it is of very rare occurrence in England, and should not be known as the English Tern.

In America, until quite recently, this species was supposed to breed only in a restricted region on the sea-coast of Delaware, New Jersey, Maryland, and Virginia; but it is now known to nest abundantly in various localities in Texas, Cuba, the Bahamas, and Mexico; and may be presumed to breed in various other regions where its presence has thus far escaped detection.

Mr. Ridgway — who in company with Mr. Henshaw visited Cobb's Island, Va., in the latter part of July, 1879 — informs me that he found this the most numerous species, nesting on the dry sand, just beyond the surf, and on the higher parts of the island, and there at least not a *Marsh* Tern. Its note he describes as being a harsh chattering laugh; and he thinks that this bird might with propriety be called the Laughing Tern. Mr. Ridgway describes this as being much bolder than the other Terns in its attempts to protect its breeding-place. It darts downward, from directly overhead, with such impetuosity as almost to strike the intruder, the noise which the bird makes in opening its wings to check its downward course being similar to, and sometimes almost as loud as, the "boom" of the Night-hawk.

Mr. Salvin met with this Tern in February on the Pacific coast of Guatemala, and procured several specimens. It did not congregate in any numbers; two or three, at the most, being all that flew in company. Léotaud states that at times this Tern is quite common about the Island of Trinidad, where it appears to be a migratory species. Dr. Gundlach has informed me that it breeds in Cuba, where he has obtained both eggs and young.

Mr. N. B. Moore records the procuring of a single example on Long Island (one of the Bahamas) Aug. 6, 1876. Mr. Lawrence notes the capture of specimens in Southwestern Mexico, by Sumichrast, in August and February. Dr. James C. Merrill and Mr. G. B. Sennett found a large colony of these Terns breeding in company with the *Sterna Forsteri*, on a salt prairie, near Fort Brown, Texas, May 16, 1877. The latter mentions having also observed this species, March 1, at Galveston, and afterward at Nueces Bay and Corpus Christi Pass. Near Fort Brown the two Terns were breeding at adjacent but separate localities.

Mr. Dresser also found it breeding on the coast of Texas, near Galveston. He also states that he found it not uncommon near Matamoras in July and August. On the 2d of June, 1864, he observed it breeding on Galveston Island, the eggs being then incubated. The nest was generally merely a hole scratched in the sand; but in some instances an attempt had been made to form a bed of straw and drift-stuff. The eggs were generally three, but sometimes four, in number.

A single specimen of this Tern was obtained on Ipswich beach, in September, 1871, by Mr. C. J. Maynard; with this exception I am not aware of any having been taken in New England. Giraud speaks of this Tern as being very rare about Long Island, where he never met with it in any of his excursions. Mr. Lawrence includes it in his list of birds found about New York.

Wilson met with it in the neighborhood of Cape May, particularly in the salt-marshes, where it was found to feed largely on a kind of black spider, plentiful in such places, and which seemed to constitute its principal food, as in several of these birds which he opened the stomach was crammed with a mass of spiders and nothing else. The voice of this species he describes as being stronger and sharper than that of the common Tern. This bird did not associate with others, but kept in small parties by itself. He found it breeding on the marshes, the female dropping her eggs — which were three or four in number — on the dry drift grass, without the slightest appearance of a nest. He describes them as being of a greenish olive, spotted with brown.

According to Audubon, this Tern is abundant in the beginning of April about the salt-marshes at the mouth of the Mississippi, making its appearance along the coast in small flocks, there being seldom more than half-a-dozen individuals together, and often only two. He speaks of its flight as being remarkable for its power, as well as for its elegance. Its usual cry is rough and sharp, distinguishable at a considerable distance, and often repeated. It swims buoyantly, but not swiftly, and when wounded does not attempt to dive; but if taken in the hand bites severely, without uttering any cry. Audubon is inclined to the belief that this Tern rarely eats fish. In a large number of individuals of this species, obtained in various localities, he never found any other food in their stomachs than insects of various kinds. In many instances he observed them catching insects on the wing, both over pools of water and over dry land.

Audubon also states that they deposit three eggs, on such dry rushes as are commonly found in salt-marshes, and at a short distance from the water, but carefully placed, so as to be beyond the reach of the tides. Like the eggs of all Terns, these differ considerably in their markings. They are said to measure 1.75 inches in length, and 1.07 in breadth, and have a greenish-olivaceous ground-color, marked with irregular splashes of dark umber, almost black, disposed around the larger end. The parents sit more closely than is usual with Terns; and in cloudy weather they never leave their charge.

Temminck mentions that Boie procured a number of examples of this bird from the eastern coast of Jutland, where the latter was assured that it breeds; and Mr. Dresser cites numerous instances of its breeding in various parts of Denmark. It formerly bred on the Island of Lips, in the Baltic, and is now a rare visitant to the northern coast of Germany. A few birds of this species have been taken on the coast of France; and it is mentioned as being common in Hungary, Turkey, and also in Greece and Asia Minor, breeding abundantly in the lagoons of Missolonghi, and near Smyrna. It breeds in various other portions of Southern Europe, as well as in North Africa, where Canon Tristram met with it in the Sahara; other writers also mention it as being abundant in Egypt.

This species occurs throughout Asia, from the eastern coast of the Mediterranean to the China Seas. It is abundant all over India, where it feeds on aquatic food in the marshes, and occasionally hunts for grasshoppers in cultivated fields. It is common in Ceylon and in China, and has been seen throughout the Malay Archipelago, as far south as Australia; in that country, however, it is very rare. It is also quite common on the shores of the Red Sea, breeding along the coast of India, and in other portions of Southern Asia. Mr. Blyth obtained examples of this species near Calcutta, and it is said to be abundant about the Island of Sunda. The Tern taken by Horsfield on the Island of Java, and described by him under the name of *Sterna affinis*, is now recognized as being identical with this species. I am indebted to Mr. Howard Saunders for an example of its egg taken by Captain Butler from the Island of Warraba, in the Persian Gulf. It is not distinguishable from eggs of this species taken on the coast of Virginia, and the examples of this bird shot by Prince Neuwied on the coast of Brazil, and sent by him to Temminck, are described by the latter as being identical with those taken on the lakes of Hungary.

The ground-color of the eggs of the Marsh Tern varies from a pale greenish buff to a light olive-drab. They are of a rounded oval shape, less oblong than the eggs of most Terns, and more gull-like both in shape and general appearance. Three eggs from Hogg Island, Va., measure 1.85 by 1.30 inches; 1.90 by 1.35; and 1.95 by 1.35. Mr. Seebohm describes an egg taken by him in Greece as measuring 2.36 inches in length, and others as ranging from that to 1.70 inches. He describes their ground-color as yellow ochre or stone-color, varying from a grayish white to a brownish citron. The spots are a mixture of greenish brown and reddish brown. The underlying spots are of a lighter color, but are quite distinct. The egg from the Island of Warraba measures 1.92 by 1.36 inches, has a ground-color of a yellowish drab, and is boldly but sparingly spotted with rounded splashes of deep purplish brown, the underlying spots being similar, but of a lighter shade. Mingled with these are a few smaller blotches of yellowish brown.

An egg taken by Mr. Sennett, near Fort Brown, measures 1.88 by 1.34 inches, and may be described in the same words as the egg from the Gulf of Arabia, except that the blotches are of a smaller size.

Sterna caspia.

THE CASPIAN TERN.

Old World references.

Sterna caspia, PALL. Nov. Comm. Petrop. XIV. 1770, 582. — GMEL. S. N. I. ii. 1788, 603.
Sterna caspica, SPARRM. Mus. Carls. III. 1788, pl. 62.
Thalasseus caspius, BOIE, Isis, 1822, 563.
Sterna Tschegrava, LEPECH. Nov. Comm. Petrop. XIV. 1770, 500, pl. 13, fig. 2.
Sterna megarhynchos, MEYER, Tasch. Deutsch. Vög. II. 1810, 457.
Sylochelidon strennuus, GOULD, P. Z. S. 1846, 21; B. Austr. VII. 1848, pl. 22 (Australia).
Thalassites melanotis, SW. B. W. Afr. 1837, 253 (type in Cambridge Mus.; examined by H. S.).
Sylochelidon balthica et *Schillingii*, BREHM, V. D. 1831, 769, 770.
Sterna major, ELLMAN, Zool. 1861, 7472.

American references.

Sterna caspia, Lawr. in Baird's B. N. Am. 1858, 859. — Baird, Cat. N. Am. B. 1858, no. 682. — Coues, Key, 1872, 319; Check List, no. 561; 2d ed. 1882, no. 793. — Ridgw. Nom. N. Am. B. 1881, no. 680.

Thalasseus caspius, Coues, Pr. Ac. Nat. Sci. Philad. 1862, 537 (part). — Elliot, Illustr. Am. B. pl. 56.

Sterna (*Thalasseus*) *caspia*, Coues, B. N. W. 1874, 667 (part).

Thalasseus imperator, Coues, Pr. Ac. Nat. Sci. Philad. 1862, 538 (in text; Labrador).

Sterna caspia, var. *imperator*, Ridgw. Ann. Lyc. N. Y. X. 1874, 391.

Hab. Palæarctic Region. North America in general, but very irregularly distributed; breeding in Labrador, along the Arctic coast, on islands in Lake Michigan and along coast of Virginia and Texas! ? Humboldt Marshes, Nevada, numerous; coast of California.

Sp. Char. Largest of the Terns (wing not less than 15.00 inches). Bill very robust, reddish; tail short and but slightly forked; inner webs of primaries wholly dark slaty. *Adult, in summer:* Entire pileum, including occipital crest and upper half of lores, deep black, the lower eyelid with a white crescentic spot. Upper parts very pale pearl-gray, fading insensibly to white on the upper tail-coverts, the tail bluish white; outer surface of the primaries light hoary ash, their inner webs uniform slate or dark hoary gray. Rest of the plumage snow-white. Bill deep coral-red, with a dusky suffusion subterminally, the tip orange or yellowish; iris dark brown; legs and feet deep black. *Adult, in winter:* Similar, but the black of the head streaked with white. *Young, first plumage:* Similar to the adult, but with the following differences: Pileum (including occiput and upper two thirds of lores) grayish white, thickly streaked with dull black; side of head with a uniform dull black bar, beginning before and beneath the eye and extending back over upper portion of auriculars; lower portion of lores and auriculars grayish white, mottled with darker grayish. Mantle pale pearl-gray, sparsely marked with irregular spots, mostly inclining to crescentic or V-shaped form, of brownish dusky, the wing-coverts, however, nearly immaculate; the markings largest on longer scapulars and terminal portion of tertials; primaries hoary gray, with white shafts, the shorter ones margined with white; rump and upper tail-coverts immaculate pearly white; rectrices hoary gray, distinctly spotted with blackish toward tips. Rest of plumage plain white. Bill dull orange (in dried skin), dusky subterminally; feet brownish (in skin). (No. 93033, ♀, Warsaw, Ill., Sept. 21, 1883; Charles K. Worthen.) *Downy young:* Above, grayish white, the down of the head dusky grayish at the base; back and rump finely and indistinctly mottled with

grayish; throat and foreneck uniform pale grayish; remaining lower parts, including the chin, immaculate white. Bill, legs, and feet dull orange, the former with the tip blackish.

Total length, about 21.50 inches; extent, 51.00; wing, 15.00–17.40; tail, 5.30–6.75, depth of its forking, .75–1.60; culmen, 2.48–3.10; depth of bill through base, .75–.95; tarsus, 1.60–1.95; middle toe, 1.15–1.40.

The difference in size between examples of this species from North America and those from Europe seems scarcely sufficient to warrant the recognition of a var. *imperator*. We have examined fourteen adult examples; but of these only two were European, one being from Australia, the others from various parts of North America, including the coast of California. The smallest of this series is from Denmark, the wing of which measures only 15.00 inches, the culmen 2.48; but a Californian specimen is scarcely larger, measuring only 15.15 and 2.50 respectively. The bill is narrower in the latter specimen than in any other, measuring only .75 of an inch deep at the base, instead of from .80 to .95. The largest specimen is one from Western Australia, which measures: Wing, 17.00 inches; tail, 6.50; culmen, 3.10; depth of bill, .90; tarsus, 1.75; middle toe, 1.30. A Canadian specimen (No. 70316, ♀, Detroit River, near Sandwich, Ontario, May 2) is scarcely smaller, however, while the wing is actually longer, the measurements, as above, being 17.40, 6.05, 2.65, .86, 1.60, 1.22 inches. There are two American specimens in the collection which are decidedly smaller than an adult male from Europe, one being the example from California, noted above, the other from Wapitugan, Labrador. The latter measures 16.00, 6.00, 2.55, .80, 1.65, 1.15 inches; the European specimen in question being 16.00, 6.25, 2.75, .85, 1.65, 1.20. It is therefore evident that while we may perhaps concede to the American birds of this species a larger average size, the difference is not sufficiently constant to warrant the formal recognition of a var. *imperator* based upon difference of size alone.

The Caspian Tern is somewhat cosmopolitan in its distribution. It is of irregular and comparatively limited occurrence, so far as we know, in North America. Mr. Lawrence has received specimens that had been procured on the southern coast of Long Island. Dr. Turnbull mentions the taking of examples on the coast of New Jersey. Mr. Boardman informs me that individuals have been occasionally taken in the Bay of Fundy. Mr. William Brewster met with a flock at Ipswich, Mass., Sept. 15, 1871, one of which was secured. There were about half a dozen others flying about at the time. Mr. Sennett saw this Tern on the coast of Texas, and Dr. Merrill found it breeding on Padre Island, near Fort Brown. It has been found by Mr. B. F. Goss breeding on islands in Lake Michigan.

Professor Kumlien, to whom this species was once familiar, informs me that he has occasionally seen a large Tern in Lake Koskonong, Wis., which he is very confident can be none other than this bird. He has seen it near enough to know that it is a Tern, but has never been so fortunate as to secure one. He has met with it in May and in June; but has never noticed more than three at a time, and generally not more than one.

Messrs. Ridgway and Henshaw found this species breeding on Cobb's Island, Va., in the summers of 1879 and 1880. Late in July Mr. Henshaw procured one pair with their downy young, and others were positively identified; and there may have been still other individuals among the large Terns seen at too great a distance to be identified as not being the *regia*. These two Terns are not distinguished by the residents, both species being confounded under the local name of "Gannet-Strikers," or "Gannets." The Caspian Tern is supposed to breed in considerable numbers on certain islands in the vicinity of Cobb's.

Mr. Ridgway now regards it as probable that the large red-billed Terns which he saw at the Humboldt Marshes in September, 1867, at Washoe Lake in May, 1868, and at Great Salt Lake in June and July, 1869, were of this species, and not *S. maxima*, as he had supposed ("Ornithology of the Fortieth Parallel," p. 639).

Audubon when in Labrador was surprised to find a Tern — which he supposed to be what he called the Cayenne (*S. maxima*) — breeding on that coast. It is not probable that the birds he saw, but was unfortunately unable to secure, were of the species to which he referred them. He obtained an egg — now in my possession — marked as that of the Cayenne Tern; but it certainly is not an egg of a *Sterna maxima*, nor hardly one of the present species. Mr. Howard Saunders thinks the bird seen by Audubon was the Kittiwake Gull; but it does not seem likely that this ornithologist could have mistaken it for a Tern — a bird with which he was so familiar.

Mr. Bernard Ross met with the Caspian Tern on the Mackenzie River; and the Smithsonian Institution has examples from the Hudson's Bay Region. Several individuals of this species have been both observed and procured in various portions of the Arctic Regions. Mr. Robert Kennicott secured three near Fort Resolution, in 1860; Mr. Clarke, Jr., several near Fort Rae, in 1863; Mr. J. Lockhart, others at Fort Resolution, in 1864; Mr. J. Reid, several on Big Island, May 20, 1864; and Mr. McKenzie, a single specimen near Moose Factory.

The Caspian Tern was described by Pallas, who first met with it on the shores of the Caspian Sea — from which circumstance it received its name; more recently other Russian naturalists have seen it in that region, though it has never been found in abundance there.

Mr. Wheelwright met with it in Scandinavia, where it is a very local bird. A few pairs breed yearly on the Wener, and it has been killed as far north as Tornea; but it is rare in Sweden. It seems to breed commonly on the Isle of Sylt, in Denmark. Its eggs — three in number — are described as considerably larger than those of the *Larus canus*, smooth, and of a light drab ground-color, with large and small purple-brown spots scattered over the whole surface of the egg. The spots are wide apart, leaving the ground-color very apparent, and giving to the egg a lighter appearance than is common in the egg of a bird of this family.

Nilsson states that this species also visits the mouth of the Baltic, and is seen in the vicinity of the Elbe. Mr. E. L. Layard mentions having observed it on the sea-coast of New Zealand.

Mr. H. Saunders, in his Notes on the Birds of Southern Spain ("Ibis," 1871), states that it was occasionally obtained at the mouth of the Guadalquivir, in Spain, but that according to Guirao it is more abundant on the eastern coast.

The Caspian Tern is said by Mr. R. Swinhoe to visit the coast of Formosa in its migrations from more northern latitudes, in winter, more especially after severe northeasterly winds. It is also a winter visitor at Amoy. The same observing naturalist also mentions his finding it plentiful about the harbor of Hoenow, on the Island of Hainan, in February and until the beginning of April. These birds were often seen sitting in large parties on the sand-flats.

Individuals were met with by Mr. Tristram on the shore near Jaffa; and Dr. Heuglin found it in pairs throughout the whole year in the Red Sea and in the Gulf of Aden. It is also stated by Mr. T. L. Powys to occur sparingly in winter at Corfu and on the coast of Epirus; and Lord Sperling found it very abundant near Missolonghi, in Greece, where hundreds of this species could be seen at a time floating over the lagoons on the lookout for their prey. Dr. A. L. Adams ("Ibis," 1864) speaks of finding this species common in Lower Egypt. Dr. Kirk, in his Notes on the Birds of the Zambesi Region, in Eastern and Tropical Africa, also mentions ("Ibis," 1864) finding these birds, in the month of January, breeding in company with the *Sterna velox*, on the low sand-islands off the mouth of the main stream of the Zambesi. There were two or three eggs in each nest, and these are described as being of a dirty gray, with black spots. The nests consisted of slight hollows in the sand, with a few sticks gathered round.

Mr. C. A. Wright, in his List of the Birds of Malta ("Ibis," 1870), mentions having observed one of this species, on the 21st of May, at Fort Mandel Island, which was quite fearless, and repeatedly approached close to the soldiers on guard, who threw pieces of bread to it, which were immediately pounced upon and swallowed. This bird was afterward shot, and ascertained to be a female, with eggs in the ovary in an advanced stage of development.

According to Yarrell, the Caspian Tern is an occasional visitant of the British coast. Seven instances of its occurrence there are named, one of which was in October, 1825, one in June, 1849, and one in August, 1851. It is also known to have been taken at different times in Germany, Holland, Switzerland, France, Italy, Corsica, and Sicily. It has also been obtained at Senegal, at the Cape of Good Hope, and near Calcutta.

Eggs in Yarrell's collection — from the vicinity of Hamburg — are described by him as being 2.50 inches in length, and 1.65 in breadth; of a yellowish stone ground-color, spotted with ash-gray and dark red-brown. The ground-color of the egg of this species in my cabinet is a light grayish drab. The markings are scattered and rather small, of a subdued lavender and raw-umber, of different shades, in some cases being more nearly black. Two eggs — procured at Great Slave Lake by Mr. L. Clarke — measure, one, 2.70 by 1.70 inches; the other, 2.55 by 1.80. An egg marked as having been taken in Turkey has a ground of a light but distinct drab, with very nearly black scattered and rounded spots. This egg measures 2.44 by 1.80 inches. Other eggs from Scandinavia measure as follows: 2.48 by 1.73; 2.55 by 1.72; 2.59 by 1.76; 2.60 by 1.80.

Sterna maxima.

THE ROYAL TERN.

La Grande Hirondelle de Mer, de Cayenne, Buff. Ois. VIII. 346.

Hirondelle de Mer, de Cayenne, Buff. Pl. Enl. 988.

Sterna maxima, Bodd. Tabl. P. E. 58 (ex Pl. Enl. 988). — Scl. & Salv. P. Z. S. 1871, 567 (critical). — Saunders, P. Z. S. 1878, 655 (do.). — Coues, 2d Check List, 1882, no. 794.

Sterna cayennensis, Gmel. S. N. I. ii. 1788, 604.

Sterna cayana, Lath. Ind. Orn. II. 1790, 804, no. 2. — Nutt. Man. II. 1834, 268. — Aud. Orn. Biog. III. 1835, 505; V. 1839, 639, pl. 273; Synop. 1839, 316; B. Am. VII. 1844, 76, pl. 429.

Sterna galericulata, Licht. Verz. Doubl. 1823, 81 (type in Berlin Mus.; determined by H. S.).

Sterna erythrorhynchus, Wied, Beitr. IV. 1833, 857.

Sterna cristata, Swains. B. W. Afr. II. 1837, 247, pl. 30 (type in Cambridge Mus.; examined by H. S.).

Sterna regia, Gamb. Pr. Acad. Nat. Sci. Philad. 1848, 228. — Coues, Key, 1872, 319; Check List, 1873, no. 562. — Lawr. in Baird's B. N. Am. 1858, 859. — Baird, Cat. N. Am. B. 1859, no. 683. — Ridgw. Nom. N. Am. B. 1881, no. 681.

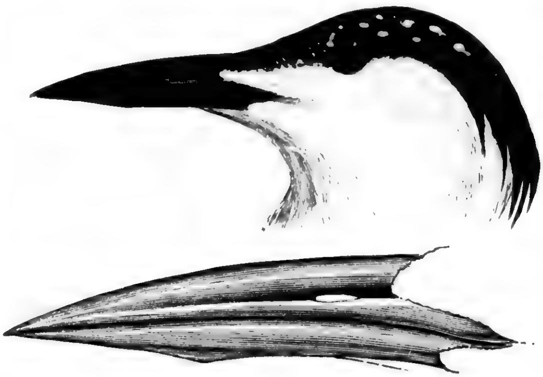
Thalasseus regius, Gamb. Journ. Philad. Acad. I. 2d ser. 1849, 228. — Coues, Pr. Philad. Acad. 1862, 539 (critical).

Sterna (Thalasseus) regia, Coues, B. N. W. 1874, 669.

"*Sterna Bergii*," Irby, Orn. Str. Gibr. 1875, 209 (specimen examined by H. S.). Not *S. Bergii*, Licht. 1823.

Hab. Tropical and warm-temperate parts of America, north to Long Island, Massachusetts, Great Lakes, Utah (?), Nevada (?), and coast of California; south to Brazil and Peru. West coast of Africa, north to Tangiers (Dalgleish, "Auk," January, 1884, p. 97).

Sp. Char. Nearly as large as *S. caspia*. Bill deep orange-red or orange. Tail quite deeply forked. *Adult, in spring:* Entire pileum, including occipital crest and upper half of the lores, deep black. Upper parts pale pearl-gray (about as in *S. caspia*), becoming white on the rump and upper tail-coverts. Tail grayish white, tinged with pearl-gray. Outer webs of primaries pale silvery gray, the outer quill darker; inner webs slaty in a broad stripe next the shaft, the inner portion abruptly white, the dusky extending anteriorly near the inner edge of the web, except on the outer quill. Bill deep orange-red; iris dark brown; legs and feet deep black. *Adult, in summer:* Similar, but the forehead, lores, and fore part of crown white. Bill uniform deep orange-chrome, paler at tip; edges of eyelids black; iris dark brown; legs and feet deep black. *Adult, in winter:* Similar to summer dress, but feathers of the occipital crest more or less bordered with white; tail-feathers more decidedly tinged with gray, the outer rectrices sometimes quite dark ash terminally. "*Young of the year, in August:* Bill considerably smaller and shorter than in the adult, its tip less acute, and its angles and ridges less sharply defined, mostly reddish yellow, but light yellowish at tip. Crown much as in the adults in winter, but the occipital crest scarcely recognizable as such. Upper parts mostly white, but the pearl-gray of the adult appearing in irregular patches, and the whole back marked with small irregularly shaped, but well-defined spots of brown. On the tertials the brown occupies nearly the whole of each feather, a narrow edge only remaining white. Lesser wing-coverts dusky-plumbeous. Primaries much as in the adults, but the line of demarcation of the black and white wanting sharpness of definition. Tail basally white, but soon becoming plumbeous, then decidedly brownish, the extreme tips of the feathers again markedly white. Otherwise as in the adults" (COUES.)



Total length, about 18.00 to 20.00 inches; extent, 42.00 to 44.00; wing, 14.00–15.00; tail, 6.00–8.00; the depth of its fork, about 3.00–4.00; culmen, 2.50–2.75; depth of bill through base, .70; tarsus, 1.37; middle toe, with claw, 1.40.

It is very questionable whether the bird with entirely black pileum can be regarded as in full breeding-plumage. In July, 1880, Mr. Ridgway found a colony consisting of several thousands of this species breeding on Cobb's Island, Va. Dozens were shot as they flew from their eggs, and *not one* could be secured, or even observed, which did not have the forehead and fore part of the crown white. All the eggs were quite fresh; but it is barely possible that the birds may have previously laid in some other place, and their eggs have been taken by fishermen. It seems, therefore, most probable that the wholly black pileum represents the full spring, or perhaps pairing, dress, rather than the livery of the breeding-season.

This handsome Tern, so far as we now know, has a somewhat restricted residence. Breeding in small numbers on the Atlantic coast as far north as Chesapeake Bay, it becomes more common in Florida, and is probably found more or less abundant along the entire coast of the Gulf of Mexico, as well as on the Pacific coast of Central America, Mexico, and Southern California.

Mr. Dresser found it common about the mouth of the Rio Grande during the summer months; and both Dr. Merrill and Mr. Sennett have met with it in the same locality. Mr. Salvin procured examples among the Keys on the coast of Honduras, in May, 1862. Numerous other specimens, both adult and young, of this bird were afterward obtained in the same locality.

According to Dr. Cooper, this Tern wanders in midsummer along the Pacific coast as far north as the Columbia River. On the Atlantic it occasionally visits Long Island and, more rarely, the islands of Southeastern Massachusetts, where a pair was obtained in the summer of 1874 by Mr. C. J. Maynard and Mr. William Brewster. A few breed as far north as Southern Maryland, on its eastern shore.

Late in July, 1879, Messrs. Ridgway and Henshaw met with this Tern in considerable numbers at Cobb's Island, on the eastern shore of Virginia. It was in company with *S. caspia;* and the two species were confounded by the residents of the island under the common name of "Gannet-strikers," or "Gannets." This species appeared to be much the more numerous of the two. Mr. Ridgway visited the same locality the following season (July, 1880), and found a colony numbering several thousands breeding near the northern end of the island, their eggs covering thickly an area of less than an acre in extent.

This species occurs in several of the West India islands. It was found breeding in Cuba by Dr. Gundlach. In 1854 Professor Alfred Newton received from St. Croix an example of this bird which had been killed on that island; and he afterward not infrequently saw Terns in that vicinity which he judged to be the same species. Léotaud mentions this bird as being an occasional visitant of Trinidad; the Terns which are seen are chiefly in their immature plumage, appearing to be migratory only, coming in August during the period of the wintry rains. They are also common in Jamaica, where, according to Mr. Gosse, this is the most abundant species about the Bay of Bluefields.

Giraud states that this Tern, though rare on Long Island, is yet not entirely unknown in that locality; and he mentions the existence in private cabinets of two specimens, shot at Islip. He also states that Mr. Bell has from time to time received other specimens procured at various points of the southern coast, near Raynor South, and Moriches, and in that vicinity.

Dr. Cooper mentions this as the only species of Tern seen by him on the coast of California, where it is abundant at all seasons. He did not, however, ascertain where it breeds, and saw no locality which would seem favorable for this purpose. Even San Nicolas, the only island lying far south to which it resorts, is too much infested by foxes; and there seemed to be no Terns on Santa Barbara, which is such a favorite nesting-place for several other species.

Mr. Henshaw does not think that the range of this Tern extends any farther north than the coast of California, where it is of rather common occurrence. He saw it near San Francisco, and received from Captain Forney a specimen which had been obtained on the Island of San Miguel, where it is known to breed.

This bird is usually observed flying in straight lines along the shores, or up and down the bays, occasionally uttering a squealing cry, and often darting directly down into the water as if shot, but generally emerging with a fish, which is immediately swallowed, or, if too large, divided by its sharp cutting bill. This Tern is generally a very shy and suspicious bird; but if wounded, will strike boldly with its bill — being much more pugnacious than are the tamer Gulls. Though it usually fishes singly, yet it will associate in large flocks on its resting-place; and when one of these birds is wounded, all its companions will fly anxiously around in such proximity as to be easily shot.

In the autumn months Mr. Gosse used frequently to see individuals of this species engaged in fishing on a reef about a quarter of a mile from the Jamaican shore. The birds were solitary in their habits, and did not associate with others of their kind. They would fly rapidly around in large circles high above the water, flapping their wings rapidly and without intermission; then all at once they would descend perpendicularly, at the same time turning the body in a jerky, irregular manner. On touching the water the birds would disappear with a sudden splash, but reappear a moment later, struggling as if it were not an easy thing to rise again; then all at once they would utter plaintive cries, as if alarmed, and fly off along the coast; but would return again, and calmly resume their wonted occupation. When satisfied, this bird betakes itself to some buoy marking a sunken fishpot, and there reposes. The fishermen, on returning to their pots at early day, often find it sitting on their buoys, so fearless that the canoe will almost touch it before it will fly. Though web-footed, it is rarely known to swim; and, when wounded, struggles in the water as a land bird would do.

In Florida Audubon found this Tern surprisingly shy. At first the birds were in great flocks, resorting at low water to a large flat sandbar, where they reposed awaiting the return of the tide. For several days he was unable to procure a specimen, and only succeeded by employing several boats to join in the pursuit. After one had been wounded there was no difficulty in procuring others. He found this Tern on the St. John's River, at a distance of several miles from the sea. When disturbed at its breeding-place, it manifests the noisy displeasure so characteristic of its tribe, uttering loud cries that may be heard to the distance of half a mile or more.

On the 11th of May, 1832, Audubon saw it breeding on one of the Tortugas. The eggs had been dropped on the bare sand a few yards from high-water mark, and during the heat of the day none of the birds paid much attention to them. The number of eggs was usually two, but sometimes only one. They are described as being 2.75 inches in length, and 1.80 in breadth. They have a pale-yellowish ground-color, spotted with dark umber and faint purple.

The eggs of this species are remarkably uniform in their general characteristics. Their ground-color is a buffy white, varying only in the intensity of the tinge. The markings are black, suffused with sepia-brown, with dark shades of the same deepening into blackness. Four eggs in the Smithsonian Collection, from the Tortugas, present the following measurements: 2.45 by 1.75 inches; 2.45 by 1.85; 2.55 by 1.75; and 2.65 by 1.75.

Sterna elegans.

THE ELEGANT TERN.

Sterna elegans, GAMB. Pr. Philad. Acad. IV. 1848, 129 (Mazatlan). — LAWR. in Baird's B. N. Am. 1858, 860; ed. 1860, pl. 94. — BAIRD, Cat. N. Am. B. 1859, no. 684. — SAUNDERS, P. Z. S. 1876, 653 (critical). — RIDGW. Nom. N. Am. B. 1881, no. 682. — COUES, 2d Check List, 1882, no. 795.

Thalasseus elegans, GAMB. Journ. Philad. Acad. ser. 2, I. 1849, 228. — COUES, ib. 1862, 540 (critical).

Sterna comata, PHIL. & LANDB. Wiegm. Archiv, 1868 (?), 1863, pt. 1, 126.

Sterna galericulata, FINSCH, Abh. Nat. 1870, 359 (Mazatlan; not of LICHT. 1823, which = *S. maxima*, BODD.). — SCL. & SALV. P. Z. S. 1871, 568. — COUES, Key, 1872, 319; Check List, 1873, no. 563.

Sterna (Thalasseus) galericulata, COUES, B. N. W. 1874, 671.

HAB. Pacific coast of America, from Chili to California. No valid reference from the Atlantic coast.

SP. CHAR. Smaller than *S. maxima*, and decidedly more slender. Bill more reddish orange. Tail more deeply forked. *Adult, in spring:* Pileum, including occipital crest and upper half of lores, deep black. Upper parts pale pearl-gray (about the same shade as in *caspia* and *maxima*), becoming pure white on the lower part of the rump, upper tail-coverts, and tail; outer surface of primaries light silvery gray, the inner webs edged with white; inner webs of primaries marked next the shaft with a broad stripe of dark gray, this color, except on the outer quill, extending anteriorly in a point near the end of the feather. Rest of the plumage, including nape, pure white, the lower parts tinged with delicate rose-pink in fresh specimens. Bill red (yellowish or orange in dried skins); iris brown; legs and feet black. *Adult, in winter:* Similar, but forehead and lores white; crown white, spotted with dusky; occipital crest and side of head to in front of the eyes, deep black. *Young (first plumage)*: Pileum dull brownish black, nearly uniform on the occiput, where the feathers are not elongated, but short and blended; whole crown streaked with white; forehead and lores white, finely streaked with black. Nape, upper tail-coverts, and lower parts, white, the lower part of the first with sparse roundish spots; back, scapulars, and wing-coverts dirty whitish, coarsely and irregularly spotted with dusky brown, this color almost uniform near the anterior portion of the lesser wing-covert region, the anterior border of which is white; secondaries dusky, bordered terminally with white; primaries hoary slate, with a narrow terminal border of white, the inner webs mostly white, with a broad dusky stripe next the shaft. Tail-feathers brownish slate, becoming grayish basally, the ends conspicuously bordered with white. Bill reddish; feet dusky.

Wing, 12.40–12.50 inches; tail, 6.60–7.30, the depth of its fork, 2.60–3.50; culmen, 2.25–2.55; depth of bill through base, .45–.50; tarsus, 1.05–1.25; middle toe, .80–.86.

This species has only a limited claim to a place in the fauna of North America. It is a Mexican and Central American species, and occurs on the coast of California only occasionally, irregularly, and very rarely. It was procured on the Pacific coast of Mexico by Dr. Gambel, and was particularly common near Mazatlan. Dr. Cooper could procure no evidence that this species ever occurs so far north as San Diego, in California. Mr. Salvin obtained, at San Salvador, in Central America, a specimen of this Tern, which he regarded as being absolutely identical with the typical *S. elegans* from the Gulf of California. It was taken in December, 1862.

A specimen of the egg of this Tern — obtained at Guaymas, west of Sonora, Mexico, by Captain Stone (Smithsonian Institution, No. 579) — measures 2.20 inches in length by 1.45 in breadth. It has a ground-color of white with a pinkish tinge. Its markings are quite bold and distinct, and are of a deep black and burnt sienna color, with subdued shell-markings of lavender-gray.

Sterna sandvicensis acuflavida.

CABOT'S TERN.

Sterna cantiaca, Aud. Orn. Biog. III. 1835, 531, pl. 279 (not of Gmel. 1788); Synop. 1839, 317; B. Am. VII. 1844, 87, pl. 431. — Coues, Key, 1872, 320; Check List, 1873, no. 564; 2d ed. 1882, no. 796.

Sterna (Thalasseus) cantiaca, Coues, B. N. W. 1874, 673.

Sterna Boysii, Nutt. Man. II. 1834, 276 (not of Lath. 1790, = *cantiaca*, Gmel.).

Sterna acuflavida, Cabot, Pr. Boston Soc. II. 1847, 257. — Lawr. in Baird's B. N. Am. 1858, 860. — Baird, Cat. N. Am. B. 1859, no. 685.

Thalasseus acuflavidus, Coues, Pr. Philad. Acad. 1862, 540 (critical).

Sterna cantiaca acuflavida, Ridgw. Nom. N. Am. B. 1881, no. 683.

HAB. Atlantic coast of North America, north, irregularly, to Southern New England, breeding south to Honduras; West Indies in general; both coasts of Central America. South to Brazil.

SP. CHAR. Very similar in size and form to *S. elegans*, but bill black, usually tipped with yellowish or whitish. *Adult, in spring:* Pileum, including occipital crest and upper half of lores, deep black; upper parts pale pearl-gray, a shade lighter than in *elegans;* outer surface of primaries slightly darker, with a silvery or hoary cast; inner webs of primaries white, with a broad stripe of dark grayish along the shaft. Rest of the plumage, including the nape, rump, upper tail-coverts, and tail, snow-white. Bill deep black, tipped with yellow or whitish; iris dark brown; legs and feet black. *Adult, in winter:* Similar, but the forehead and lores white, the crown streaked with white and black, and the black feathers of the occiput faintly tipped with white. *Young, first plumage:* Upper half of the head, including nearly the whole of the lores, with upper part of the nape, dusky black, irregularly mixed with dull whitish, especially on the crown, which is coarsely spotted; occipital feathers short and blended. Upper parts, including the rump, upper tail-coverts, and tail, pale pearl-gray, coarsely and irregularly spotted with brownish black; wings, except smaller coverts, as in the adult; rectrices growing darker grayish terminally, where irregularly spotted, or with irregular hastate marks of dusky black. Lower parts immaculate white. Bill dusky blackish, scarcely paler at the tip; iris dark brown; legs and feet black.

Total length, about 15.00 to 16.00 inches; wing, 12.50; tail, 6.00, the depth of its fork, 2.35; culmen, 2.25; depth of bill through base, .48; tarsus, 1.00; middle toe, about 1.00.

As remarked by Dr. Coues ("Birds of the Northwest," p. 674), there appear to be constant though slight differences between American and European birds of this species, which are quite sufficient, if they prove really constant, to separate them as geographical races. These differences are thus expressed by Dr. Coues: —

"*European:* White margin of inner web of outer three or four primaries wide, extending quite to tip, which it wholly occupies. Breadth of white portion one and a half inches from tip of first primary, .25 of an inch."[1]

"*American:* White margin of inner web of three or four outer primaries narrow, falling short of tip, which is wholly occupied by the black portion. Breadth of white margin one and a half inches, from tip of first primary, .10 of an inch."[1]

The American examples of the Sandwich Tern, claimed by some to be a distinct species, bear so strong a resemblance to the *S. sandvicensis* of Europe that the two are no longer separated by some who have examined into the alleged differences in their plumage. The European bird, so far as we know, is more nearly exclusively northern in its area of reproduction. It was first observed in Great Britain in 1784, and has since been ascertained to be a regular summer visitor, appearing in spring, and departing in autumn after rearing its brood. It also visits Ireland, where its breeding-haunts are not known. It is not abundant in England; but it is known to breed in various parts of that country, particularly on the Farne Islands and the Croquet Islands, where — as Selby states — the nests are so close to each other that it is difficult to cross the ground without breaking the eggs or injuring the unfledged young. It is there known as the "Tern" *par excellence*, all others of its kind being called Sea-Swallows. Its flight is strong and rapid; and, except when engaged in incubation, it is almost constantly on the wing, uttering at intervals a hoarse and discordant cry, which may be heard to a great distance. The eggs — three or four in number — are placed in shallow holes scratched in the ground, and are 2.00 inches long by 1.63 broad, of a yellowish stone-color, thickly spotted with ash-gray, orange-brown, and deep red-brown, but subject to considerable variations in their markings. This bird is said to breed in Scotland, Sweden, Germany, and North Holland, and on islands off Ushant. It is also said to occur in its migrations in various parts of Africa.

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[1] STERNA SANDVICENSIS SANDVICENSIS. — The Sandwich Tern.
Sterna sandvicensis, LATH. Synop. Suppl. I. 1787, 296.
Sterna cantiaca, GMEL. S. N. I. ii. 1788, 606 (exactly = *S. sandvicensis*, LATH.). — SAUNDERS, P. Z. S. 1876, 653.
Sterna africana, GMEL. t. c. 605 (young).
Sterna Boysii, LATH. Ind. Orn. II. 1790, 804 (= *cantiaca*, GMEL.).
Sterna canescens, MEYER & WOLF. Tasch. Deutsch. Vög. II. 1810, 458.
Thalasseus candicans, BREHM, Vög. Deutschl. 1831, 777.

This species was first introduced as a bird of our fauna by Audubon, who met with it in Florida in 1832. It was not then known to occur in any other part of the United States. In August, 1865, a single stray specimen of this Tern was secured in Chatham, Mass., by Mr. Vickary. I am not aware that there is any other instance on record of its occurrence north of the southern portion of Florida. Mr. Salvin found this bird very common both on the Atlantic and on the Pacific coast of Guatemala, and he obtained several specimens at Chiapam, on the Pacific coast of Guatemala, in January, 1863. These were all in immature plumage, and somewhat smaller than the average North American bird, but were undoubtedly specifically identical with it.

A flock of these birds was first met with by Audubon among the Florida Keys May 26; and in their flight and appearance they reminded him of the Marsh Tern, though in their power of flight they are said to surpass that bird. Their cries were loud, sharp, and grating, and were heard half a mile or more. These cries are kept up at intervals when the bird is in motion, and they are repeated incessantly when an intruder trespasses on its breeding-grounds, on which occasion it will dash close to the intruder's head with loud and disagreeable outcries.

When Audubon visited the Key on which this species was breeding many were still depositing their eggs, and none were sitting. Three eggs seemed to be the full complement to a nest. They were dropped on the sand at short intervals, with scarcely any appearance of a hollow for their reception. All were fully exposed to the heat of the sun, which seemed almost sufficient to cook them. Mr. Audubon gives as their average measurement 2.12 inches in length by 1.42 in breadth. The ground-color is said to be yellowish gray, varying in depth, and all more or less spotted, blotched, or marked with different tints of umber, pale brown, and reddish. He was informed by the wreckers that they were in the habit of watching the birds, and that these spend the entire winter near and upon the Keys, the young keeping apart from the old birds.

Eggs of this species in the Smithsonian Collection are from Charlotte Harbor, in the Tortugas. The ground-color of these varies from a grayish white to a deep buff, with intermediate shadings. The markings vary both as to size and shape, and in color from a light burnt sienna to black, intermingled with lavender-gray; they also vary from rounded spots to long zigzag lines. Four eggs, selected as typical, present the following measurements: 1.95 by 1.40 inches; 2.05 by 1.35; 2.05 by 1.45; and 2.35 by 1.40.

Sterna Trudeaui.

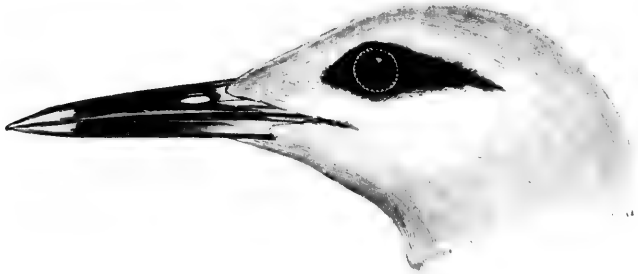
TRUDEAU'S TERN.

Sterna Trudeaui, Aud. Orn. Biog. V. 1839, 125, pl. 409; Synop. 1839, 319; B. Am. VII. 1844, 105, pl. 435. — Lawr. in Baird's B. N. Am. 1858, 861. — Baird, Cat. N. Am. B. 1859, no. 687. — Coues, Key, 1872, 322; Check List, 1873, no. 571; 2d ed. 1882, no. 802; B. N. W. 1874, 675. — Ridgw. Nom. N. Am. B. 1881, no. 684.

Sterna Frobeeni, Phil. & Landb. Wiegm. Arch. 1863, 125 (Chili).

Hab. Southern South America (Chili, Buenos Ayres, South Brazil, etc.). Casual on Atlantic coast of North America (New Jersey and Long Island; Audubon & Trudeau).

Sp. Char. *Adult, in summer* (?): Head, axillars, entire lining of the wing, and tail-coverts (above and below) silky white; a blackish or dusky stripe on each side of the head, entirely surrounding the eye, and extending back over the auriculars. Rest of the plumage very pale pearl-gray (the lower surface uniform with the upper), the outer surface of the primaries and their coverts inclining to silvery white; inner web of outer quill chiefly white, with a stripe of plumbeous-gray next the shaft; second quill with the gray stripe paler and less sharply defined, and the inner side of the web slate-gray, the edge itself narrowly white; third quill similar, but with the inner dusky stripe still more distinct, the grayish next the shaft still paler, and blended gradually into the white, which is more restricted; fourth, fifth, and sixth quills with the dusky equally distinct, and the white (except that along the edge) obsolete; remaining quills uniform silvery white. Tail uniform silvery white. Basal half of the bill brownish yellow (in the dried skin), the terminal half black, the tip pale yellow for about .25 of an inch; feet pale yellowish brown (in dried skin).[1] *Adult, in winter:* Similar, but the entire lower parts and neck pure white, the primaries more dusky, with the white on the inner webs more sharply defined. Bill dusky, the tip yellowish.



Wing, 9.70–10.60 inches; tail, 4.60–6.00, the depth of its fork, 1.60–2.60; culmen, 1.50–1.70; depth of bill through base, .35–.46; tarsus, .92–.96; middle toe, .75–.80.

This species in winter plumage is so similar to the same stage of *S. Forsteri* (= "*Havelli*," Aud.) as to be not easily distinguished. The most obvious difference consists in the shorter and less deeply forked tail, with the outer pair of rectrices broader and less elongated, their color being uniform pale silvery gray or ashy white on both webs — the inner web in *S. Forsteri* being always more or less darker than on the outer web, toward the terminal portion. The bill is also stouter than in *S. Forsteri*, especially at the base, and the tip distinctly yellowish; although this latter feature may not prove constant.

It is now generally believed that this species is exclusively South American, and only of accidental occurrence on the southern coast of Long Island, and on that of New Jersey in the neighborhood of Absecom Beach. I am not aware that any specimens have been observed within the United States since it was first described by Audubon. It was first noticed within our limits by Dr. Trudeau, who is said to have obtained several examples at the above-named beach, in the southern part of New Jersey. It is stated by Giraud as having been observed on Long Island in the adult form, but never in the immature. The bird obtained by Dr. Trudeau in the vicinity of Great Egg Harbor was in the company of a few others of the same kind.

We have no information in regard to its specific peculiarities of habits.

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[1] "Bill black, with part of the base of the lower mandible, the edges of both mandibles, and their tips to the length of about five-twelfths of an inch, yellow; iris brown; feet orange-yellow, claws dusky yellow" (Audubon).

Sterna Forsteri.

FORSTER'S TERN.

Sterna hirundo, Sw. & Rich. F. B. A. II. 1831, 412 (not of Linn.).

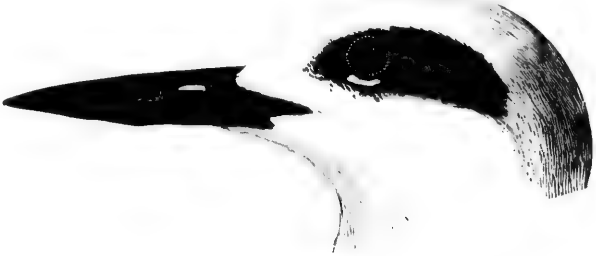
Sterna Forsteri, Nutt. Man. II. 1834, 274 (footnote). — Lawr. in Baird's B. N. Am. 1858, 862. — Baird, Cat. N. Am. B. 1859, no. 691. — Coues, Key, 1872, 321; Check List, 1873, no. 566; 2d ed. 1882, no. 798; Birds N. W. 1874, 676. — Ridgw. Nom. N. Am. B. 1881, no. 685.

Sterna Havelli, Aud. Orn. Biog. V. 1839, 122, pl. 409, fig. 1 (young in winter); Synop. 1839, 318; B. Am. VIII. 1844, 103, pl. 434. — Lawr. in Baird's B. N. Am. 1858, 861. — Baird, Cat. N. Am. B. 1859, no. 686.

Hab. North America generally, breeding from interior of British America south to the Potomac River, Illinois, Southern Texas, Nevada, California, etc.; migrating south to Brazil.

Sp. Char. *Adult, in summer:* Pileum and nape deep black. Upper parts, including rump and tail, light pearl-gray, the primaries and tail paler and more silvery, the inner webs of the outer pair of rectrices usually darker (sometimes quite dusky) for that portion beyond the tip of the next feather. Inner webs of primaries without any well-defined white space, except on two outer quills, but the edge usually more or less dusky. Tips of secondaries, anterior upper tail-coverts, sides and under part of head and neck, and entire lower parts pure white. Bill dull waxy orange, the terminal third or more blackish, with the tip usually paler; mouth orange; edges of eyelids black; iris dark brown; legs and feet very fine orange-red, the claws black. *Adult, in winter:* Similar, but the head and neck white, the occiput and nape more or less tinged with grayish, the sides of the head marked by a broad space of black surrounding the eyes and extending

Adult, in summer.


Adult in winter.

back over the auriculars. Tail less deeply forked than in summer, the outer rectrices broader and less elongated. *Young, first plumage:* Similar to the winter plumage, but the pileum, nape, back, scapulars, tertials, and wing-coverts overlaid by a wash of raw-umber brown, chiefly on the ends of the feathers, but appearing nearly uniform on the back and crown; sides of the breast tinged with the same. Rectrices all distinctly dusky terminally, especially on inner webs (the outer web of the lateral feather hoary white to the tip), the middle feathers tipped with raw-umber. Bill dusky, more brownish on basal portion of the mandible; legs and feet light brown in the dried skin. *Downy young:* Prevailing color light brownish buff, the breast and abdomen white; lower surface entirely immaculate, but upper parts coarsely and irregularly marbled with black, the sides of the head with a few scattered irregular minute markings of the same. Length, about 3.50 inches, the culmen .35 of an inch.[1]

Total length, about 12.00 to 15.00 inches; extent, 30.00; wing, 9.50–10.30; tail, 5.00–7.70; depth of its fork, 2.30–5.00; culmen, 1.50–1.65; depth of bill through base, .35–.49; tarsus, .90–.99; middle toe, 1.05–1.15.

This species, in the immature form, was described by Mr. Audubon as Havell's Tern, from specimens obtained by him near New Orleans in 1820. The flock from which these individuals were shot was congregated on the broad eddies of the river opposite to the city. They were engaged in picking up coleopterous insects. He afterward obtained two other specimens in Texas in the spring of 1837; and supposing it to be a southern species, gave its habitat as extending from Texas to South Carolina. Richardson met with it in the Arctic Regions, and confounded it with *Sterna hirundo*, to which it so closely conforms in its habits that the two species are with difficulty distinguished from each other.

Recent investigations have greatly extended the known area of distribution of this bird. While it has been ascertained by Mr. Ridgway to breed on our Atlantic sea-coast, near the Chesapeake, it has been also found to be an abundant species throughout our western territory, where it is found from the Mississippi Valley to California, breeding in the summer as far south as Southern Texas, and thence northward to extreme northern regions.

It was first specifically distinguished as *S. Forsteri* by Nuttall, in a note to *Sterna hirundo*, in his edition of 1834 (p. 274).

A single example of this species, in the plumage figured by Audubon as *S. Havelli*, was taken by Mr. Salvin on Lake Dueñas, Guatemala, Oct. 28, 1862, and was the only Tern seen by him on that lake. Colonel Grayson met with this bird near Mazatlan, in Western Mexico, where, as he states, it is quite abundant along the shores and *esteros* from October until April.

Dr. Cooper writes me, that while he has never met with this Tern within the limits of California, it has been obtained by others in different parts of the State, and especially by Dr. Heermann, who found it breeding in the valley of the Sacramento.

Although this species appears to be so largely a resident of the interior, and to be most numerous west of the Mississippi, and although it was supposed to be comparatively rare both on the Pacific and the Atlantic coast, recent discoveries show it to be less rare on the latter than has been generally supposed. A single example in immature plumage was taken by Mr. Maynard on Ipswich Beach, September, 1870; and since then several others have been secured on the sea-coast of Massachusetts. During the winter this is said to be one of the most common birds in the open water of the Patapsco, near Baltimore, and to be also a winter resident on the coast of the Carolinas. Examples have also been taken in Florida. During the months of

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[1] Described from a very young individual (No. 84780, U. S. Nat. Mus.) from Grass Lake, Ill., June 15, 1876; E. W. NELSON, coll.

October and November it is one of the most common of the Terns seen in the harbor of Beaufort, N. C.

In the summers of 1879 and 1880 Mr. Ridgway met with this species breeding in considerable abundance about Cobb's Island, Va. It was only less abundant than the *anglica,* and quite as numerous as the *hirundo,* but always found in different situations from either — frequenting especially grassy marshes, in which it nests. He found it pre-eminently a *marsh* Tern. It nested in company with, or in close proximity to, colonies of the Black-headed Gull. It could be readily distinguished from the Common Tern, which it closely resembles when on the wing, by its grating, monotonous note, which very closely resembles one frequently uttered by the Loggerhead Shrike.

In May, 1877, Dr. J. C. Merrill and Mr. Geo. B. Sennett found a colony of these Terns nesting on a nearly submerged grassy island among lagoons and marshes near Fort Brown, Texas. The birds had but just begun to lay; the nests were in depressions in the short grass, and the eggs were frequently wet. Mr. Henshaw found this species quite common at Utah Lake in the summer, where, as he also states, it breeds along the shore.

It has been taken at Lake Winnipeg by Mr. Donald Gunn, and also on Shoal Lake, in Selkirk Settlement, and in Manitoba; and it may be found even farther to the north than this; but we have thus far no evidence to this effect; and the fact that this species breeds in large numbers near the mouth of the Rio Grande, in Texas, seems to demonstrate that it is a bird of the interior, and not particularly northern.

Sir John Richardson — who in his account of what he presumed to be *S. hirundo* evidently had this bird in view — states that it does not breed farther north than the fifty-seventh parallel. Its eggs — two, sometimes three, in number — are deposited on a tuft of dry grass, upon sand, or among stones, and are hatched principally by the heat of the sun, the bird sitting upon them only during the night, or in very cold, cloudy, or stormy weather. This Tern is described as being very clamorous when any one approaches the spot where it nests, flying toward the intruder, plunging close to his head, then rising again with great velocity. In these evolutions the bird's forked tail is sometimes spread out, but is more generally closed, so as to appear pointed. It feeds principally upon small fish, which it picks up from shallow water on the wing. The length of its wings and tail and the shortness of its legs much impede its movements on the ground. It is supposed by Richardson to pass its winters south of the limits of the United States. It appears, so far as is known, to breed exclusively in the neighborhood of inland water, in the marshes bordering small lakes, ponds, and sluggish streams.

Mr. Gunn, who found it breeding in large numbers on the borders of Lake Winnipeg in the latter part of May, and afterward on the border of Shoal Lake, at Selkirk Settlement, and at Manitoba, in his notes relative to Shoal Lake makes no other mention of it than what is contained in these words: "Saw Forster's Terns in considerable numbers; their nests were among the reeds."

In the spring and summer of 1873 Mr. Thure Kumlien found this species breeding in considerable numbers on the borders of Lake Koskonong, in Southern Wisconsin. The nests were built among the thick reeds which cover its marshy shores, and were constructed, with considerable care, of coarse flags and stems of water-plants, and lined with finer reeds. The nests were raised above the ground — evidently to avoid the danger of being flooded by a rise of the lake. The eggs were three in number, and similar in size, shape, and general appearance to those of the common *S. hirundo.* Mr. Kumlien informs me that this species is much more common than the *hirundo* during the breeding-season, though by no means so common as the smaller Black Tern. It breeds in the same places with the common *hirundo*, several nests being often placed in a small space. Some of their nests are very bulky. They breed in the latter part of June, chiefly in the large muddy reedy marshes of Blackhawk Island, in Lake Koskonong. When his son Ludwig first discovered their breeding-place, their young were generally hatched, and as he approached, the old birds gave the alarm, and all the young birds deserted their nests and hid among the reeds.

Eggs of this species in the collection of the Smithsonian Institution are from Minnesota, Illinois, Cobb's Island, and from Shoal Lake in British America. The ground-color is a pale buffy drab, varying to a pale grayish green. The markings are of blackish brown, mingling with fainter markings of lilac-gray. They vary in length from 1.55 to 1.80 inches, and in breadth from 1.20 to 1.15 inches.

Sterna hirundo.

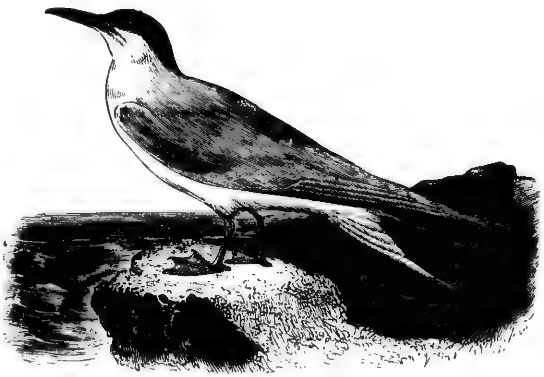
THE COMMON TERN.

Sterna hirundo,[1] LINN. S. N. ed. 10, I. 1758, 137; ed. 12, I. 1766, 227. — WILS. Am. Orn. VII. 1813, 76, pl. 60, fig. 1. — NUTT. Man. II. 1834, 271. — AUD. Orn. Biog. IV. 1838, 74, pl. 309; Synop. 1839, 318; B. Am. VII. 1844, 97, pl. 433. — COUES, Key, 1872, 320; Check List, 1873, no. 565; 2d ed. 1882, no. 797; B. N. W. 1874, 680.

Sterna fluviatilis, NAUM. Isis, 1819, p. 1847-48. — SHARPE & DRESSER, B. Eur. Pt. XI. (1872). — SAUNDERS, P. Z. S. 1876, 649.

Sterna senegalensis, SWAINS. B. W. Afr. II. 1837, 250.

Sterna Wilsoni, BONAP. Comp. List, 1838, 61. — LAWR. in Baird's B. N. Am. 1858, 861. — BAIRD, Cat. N. Am. B. 1859, no. 689.



S. hirundo.

HAB. Palæarctic Region and Eastern North America, chiefly near the coast. Winters north to about 37°; breeds irregularly nearly throughout its range. Arizona (HENSHAW); Bermudas (summer resident).

SP. CHAR. *Adult, in summer:* Pileum and nape, including upper half of the lores, uniform deep black. Upper parts deep pearl-gray (much the same shade as in *paradisæa*), the border of the wing, tips of secondaries, lower part of rump, upper tail-coverts, and greater portion of the tail pure white. Lower parts pale pearl-gray or grayish white (much lighter than the upper parts), becoming gradually white on the under part and sides of the head, and pure white on the crissum. Outer web of lateral tail-feather ash-gray, darker terminally, in abrupt contrast with the pure white of the inner web; outer webs of remaining rectrices, except the intermediæ, paler grayish. Outer web of outer primary blackish slate; outer surface of other primaries light silvery gray, slightly paler than the back; inner webs chiefly white, with a stripe of grayish next the shaft, this stripe abruptly defined on the first five quills, but growing gradually broader and paler toward the fifth, and extending, near the end of the feathers, a greater or less distance toward the base, but the edge itself narrowly white; five inner quills pale silvery gray, the inner webs edged with white. Bill bright vermilion blackish terminally, except on the tomia; inside of mouth orange-vermilion; edges of eyelids black; iris very dark brown; legs and feet orange-vermilion, lighter than the bill; claws black. *Adult, in winter:* Similar, but forehead, crown, and anterior part of lores white, the vertex mixed with black; entire lower parts pure white. *Young, first plumage:* Orbital region, occiput, and nape dull black; crown mixed black and grayish white; forehead and lores, with entire lower parts, upper tail-coverts, inner webs of rectrices, and tips of secondaries, white. Upper parts pale bluish gray, the scapulars, interscapulars, and tertials tipped with pale buff, and marked with an indistinct subterminal lunule of dusky brown; anterior lesser wing-coverts dusky, forming a broad bar across the wing; primaries much as in the adult, but darker; wing-coverts paler than the back, and bordered indistinctly with white. Outer webs of rectrices grayish, deepening on outer feathers into slate. Bill dusky brownish, the base of the mandible paler and more reddish; feet pale yellowish (in the dried skin). *Downy young:* Not distinguishable with certainty from that of *S. paradisæa* (?).

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[1] We cannot at all share in Mr. Saunders's doubts ("Proceedings" of the Zoological Society of London for 1876, pp. 650, 651) as to the general, or even exclusive, pertinence of Linnæus's descriptions of his *Sterna hirundo* to the present species.

Total length, 13.00–16.00 (14.50) inches; extent, 29.00–32.00 (31.00); wing, 9.75–11.75 (10.50); tail, 5.00–7.00 (6.00); depth of its fork, about 3.50 (average); culmen, 1.25–1.50 (1.35); depth of bill through base, about .33; tarsus, .66–.87; middle toe, .75.

Assuming *Sterna hirundo* and *S. Wilsoni* to be specifically the same, we must consider it as having an extent of distribution throughout the entire globe hardly surpassed by that of any other species. At different seasons it is found in all parts of Europe and Western Asia, and has also been taken at Madeira, on the Canary Islands, in Senegal, and in Southern Africa. It is found on the Atlantic coast of North America, from Texas and Florida, as far as the St. Lawrence, breeding sporadically, often in company with the Laughing Gull and the Roseate Tern, from Florida to New Hampshire, and with the Arctic Tern, from Muskegat, Mass., northward. Sometimes the colonies of these different species are harmoniously mingled; but more generally, even when on the same island, they keep somewhat apart. This Tern is also common in the interior, nesting on islands in fresh-water lakes and ponds, but usually in smaller numbers than on the sea-shore — probably on account of the less abundant supply of food.

Occasional pairs of this species were observed in the Fur Region, even as far as the Arctic coast. An example was taken by Mr. Kennicott, June 6, 1859, on Lake Winnipeg; another at Fort Rae, by Mr. L. Clarke; one on the Arctic coast below Anderson River, in June, 1863, by Mr. MacFarlane; and three on Big Island, in Great Slave Lake, by Mr. J. Reid.

In Europe, according to Yarrell, it is found to be less common than it was once supposed to be, when it was confounded with two other distinct species, on account of their general resemblance to each other when on the wing, and the fact that their habits are almost identical.

Mr. Wheelwright states that this species is the most common Tern on the coast of Scandinavia, and that it breeds far inland, on Lake Wener, and even goes up into Lapland. In the winter it visits Germany, Holland, France, Spain, Italy, and the Mediterranean.

In England it breeds occasionally on rocks or on banks of shingle above the sea-beach; but generally seems to prefer building on the ground, in marshes, or on small, low, and sandy islands.

It is not common — if indeed it breeds at all — on the Pacific coast; but throughout California — according to Dr. Heermann — it is very abundant along the rivers in the interior during the summer, retiring southward in the winter. Dr. Cooper never met with it on the sea-coast of California, and has never visited its summer resorts, except during the cold weather; nor did he see it on the Columbia River.

This Tern breeds on the islands of Bermuda in the summer, but is not very abundant there. Mr. Hurdis states that in August Gannet-head Rock teems with it and its young. It is known at Bermuda as the "Red-shank;" on the coast of Massachusetts it is called the "Mackerel Gull;" and on Long Island and the coast of New Jersey it is the "Summer Gull." In common with the Arctic Tern, and one or two others of the smaller kinds, it is known as a " Sea Swallow" in England.

Mr. Bernard Ross met with it on the Mackenzie River; the Smithsonian Institution has specimens received from Nelson's River; and Mr. Murray obtained specimens that were taken at Hudson's Bay. Mr. MacFarlane found it breeding on the Lower Anderson River, and it is also known to breed on the shores of Franklin Bay and of the Arctic Ocean.

Mr. Dresser obtained one specimen at San Antonio in May, 1864, and in June he found numbers breeding in Galveston Bay, the eggs being either just hatched out, or hatching. The nests were made in the high piles of drift stuff, and the eggs were three, in some instances four, in number. Mr. Audubon also mentions finding it breeding on Galveston Island; and on his voyage to Labrador he met with this same species nesting on the Magdalen Islands; and afterward in the neighborhood of American Harbor, on the coast of Labrador.

According to Giraud, this Tern arrives on the coast of Long Island and in New Jersey in the latter part of the month of April, and begins to lay early in May, depositing three eggs. It continues on that coast in great numbers until the approach of winter, when they all appear to retire beyond the limits of the United States. Dr. Bryant found it breeding as far south as Florida.

On the Island of Muskegat — a low, irregular collection of shifting sandbars, less than three miles in length, and hardly half a mile in its greatest breadth — lying between the islands of Nantucket and Martha's Vineyard, this Tern formerly bred in great numbers, in company with the Roseate and Arctic Terns and the Laughing Gull, this species in 1842 being by far the most abundant.

Spending a week, in August, 1873, on the Island of Penikese, one of the smallest of the Elizabeth Islands, I had an excellent opportunity of observing its habits. Inclusive of the young birds, it was estimated that there were about one thousand of these birds on the southern portions of that island. They nested on the uplands, from a few yards to a hundred rods or more from the water, and their nests varied from a mere depression in the ground, with scanty and loose linings, to quite an elaborate interweaving of flags. The usual number of eggs was two; but frequently there was only one, and more rarely three. This may have been owing to the lateness of the season. In one or two instances there were five eggs in the same depression; but these I presume to have been laid by at least two females, and they were watched over by several birds, which vied with each other in resenting any intrusion near their common treasures. There were many young birds of various ages about the breeding-grounds, and these were abundantly supplied with young fry of the mackerel. I had no doubt that other birds than their parents aided in this supply. The number of old birds was at least ten times that of the young; and nearly all seemed to join in the task of fishing and feeding the young birds, who were kept perfectly stuffed, and grew in size surprisingly fast.

This appears to be a very restless and a very noisy bird. It passes most of its time, from early morning until late in the evening, in the air, flying about over the beach, or marsh, as if in pursuit of insects, or skimming swiftly over the surface of the water in pursuit of small fish, which it seizes without pausing in its flight. At other times it may be seen hovering over a shoal of fish; and the instant these come to the surface it dashes headlong upon its prey, partially submerging itself in its effort. It is very buoyant on the water, and swims lightly, but never dives, other than by a partial plunge in fishing, and is seldom seen on the surface of the water. It may often be seen, at low water, resorting to sandbars and shoals, in company with smaller Gulls, picking up marine insects, small shell-fish, and other forms that abound in such places. Like several other species, it is eminently social in its disposition, moving about in large companies, and keeping up a continuous interchange of cries. It is often found associating with, and breeding in the same locality with, the *Larus atricilla*, with which it is always on good terms. Like its associate, even when not pursued by the hunter, it is timid and watchful. When one of its kind is wounded and falls into the water, those within hearing of its shrill outcries collect around the spot, where, as they hover over their stricken companion, they afford an easy mark to any disposed to continue the work of destruction.

In some localities — as on the south side of Long Island, and where their breeding-places are mere collections of sand — their eggs are laid on the bare ground, without any preparation of a nest other than a slight excavation made loosely in it, and are hatched chiefly by the heat of the sun's rays and by that of the sand itself, which retains its elevated temperature until late in the evening. The females usually sit upon their eggs only at night and during unpleasant weather. They are not, however, neglectful of their charge, but remain near at hand, and make their presence manifest if their nest is approached. If the eggs are incubated, both parents hover directly above their nest, so that where there are several species breeding together, each can easily be referred to its proper nest. If the young are hatched out, the parent bird is all the more clamorous, and plunges in the direction of the head of the intruder, occasionally striking at him with its wing, or letting fall fœcal matter upon the object of its displeasure.

A few birds of this species breed every summer in the marshes bordering Lake Koskonong, in Southern Wisconsin, from which locality I have received both nests and eggs. The former, made of coarse water-plants, are remarkably elaborate structures, evidently so constructed as to protect the eggs from the water naturally to be expected in a marshy site. Professor Kumlien writes me that this bird visits the lake in varying numbers, according to the season, arriving about the end of April. The prevalence of high winds, floods, and other adverse circumstances has a tendency to make it less abundant in some years.

The eggs in the Smithsonian Collection are from Great Slave Lake, in the extreme north, and from Hog Island, Va., in the extreme southeast. How far north on our Atlantic coast this species breeds I cannot say. I have never observed it breeding farther north than Massachusetts; but it probably ranges in the summer much farther. The eggs vary in length from 1.50 to 1.75 inches, and in breadth from 1.15 to 1.30; but 1.20 is their average breadth. Their ground-color varies from a pale greenish buff to a brownish drab. Their markings are chiefly of a dark clove-brown color, intermingled with fewer shell-markings of an obscure lavender-gray.

Sterna paradisæa.

THE ARCTIC TERN.

Sterna paradisæa, BRÜNN. Orn. Bor. 1764, 46 (not of KEYS. & BLAS. 1840, = *S. Dougalli*).

Sterna hirundo, PHIPPS, Zool. Voy. N. Pole, 1774, 188. — SHARPE & DRESSER, Birds Eur. pt. xii. (1872).

Sterna macrura, NAUM. Isis, 1819, p. 1847. — LAWR. in Baird's B. N. Am. 1858, 862. — BAIRD, Cat. N. Am. B. 1859, no. 690. — COUES, Key, 1872, 321; Check List, 1873, no. 567; B. N. W. 1874, 685. — SAUNDERS, P. Z. S. 1876, 650.

Sterna arctica, TEMM. Man. II. 1820, 742. — SW. & RICH. F. B. A. II. 1831, 414. — NUTT. Man. II. 1834, 275. — AUD. Orn. Biog. III. 1835, 366, pl. 250; Synop. 1839, 319; B. Am. VII. 1844, 107, pl. 424.

Sterna brachytarsa, GRABA, Reise. n. Färoe, 1830, 218.

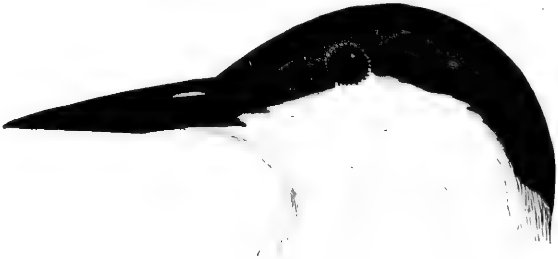
Sterna brachypus, SWAINS. B. W. Afr. II. 1837, 252.

Sterna Pikei, LAWR. Ann. Lyc. N. Y. VI. 1853, 3; in Baird's B. N. Am. 1858, 853, pl. 95. — BAIRD, Cat. N. Am. B. 1859, no. 693.

Sterna portlandica, RIDGW. Am. Nat. VIII. 1874, 433. — COUES, B. N. W. 1874, 691.

Sterna longipennis, COUES, Check List, 1873, no. 568 (= *S. Pikei*, LAWR.); nec *longipennis*, NORDM.!

HAB. Northern hemisphere in general; in America, south to the Middle States and California, breeding from the Northern States to about latitude 81° 50′ (Smith's Sound; FEILDEN, "Ibis," 1877, p. 408). No valid Central American, South American, or West Indian record.



SP. CHAR. *Adult, in summer:* Pileum and nape, including upper two thirds of the lores, deep black. Prevailing color pearl-gray, paler on the lower surface, still paler on the throat and chin, the side of the head, bordering the black of the hood, distinctly white. Tips of the secondaries and tertials, upper and under tail-coverts, greater portion of the tail, and entire lining of the wing pure white; outer web of lateral pair of tail-feathers deep ash-gray, darker terminally, in strong and abrupt contrast with the pure white of the inner web; outer web of next feather pale pearl-gray. Outer web of outer primary dark slate; inner webs of all the quills chiefly white, with a narrow stripe of silvery gray next the shaft; this stripe gradually widening on the inner feathers, where, near the end of each quill, it runs anteriorly near the inner edge; three or four inner quills uniform silvery gray, the inner web edged with white. Bill and feet deep carmine-red in life, the former usually without a black tip; iris brown. *Adult, in winter:* Similar, but forehead, anterior part of the lores, and crown white, the latter streaked with black; lower parts white, sometimes with a slight wash of plumbeous. Bill and feet duller red. *Young, first plumage:* Orbital region, occiput, and posterior part of the crown dull black; forehead and anterior portion of lores and crown white, the crown mixed with blackish and stained with brownish. Back, scapulars, and wings pearl-gray, as in the adult, but feathers tipped with pale buff, and marked with a subterminal lunule of dusky brown, these markings most distinct on the tertials and longer scapulars, fainter on the back; primaries and secondaries much as in the adult; lower part of rump, upper tail-coverts, and entire lower parts white, the sides of the jugulum and breast, as well as the chin and throat, stained with pale dull brownish. Outer webs of rectrices slate-color, paler on middle feathers; all the rectrices marked at the ends in the same manner as the tertials, but less distinctly. Basal half of bill orange-red, terminal half blackish; feet pale reddish. *Downy young:* Upper surface pale fulvous or grayish buff (the shade very variable), coarsely and very irregularly marbled with dusky, except on the forehead; lower parts whitish, distinctly buffy or fulvous on the sides and flanks, the throat and cheeks distinctly uniform dusky or sooty brown.

Total length, 14.00–17.00 inches; extent, 29.00–33.00; wing, 10.00–10.75; tail, 6.50–8.50, the depth of the fork, 4.00–5.00; culmen, 1.08–1.40; depth of bill at base, .30; tarsus, .55–.65; middle toe, with claw, .80–.85.

The Arctic Tern very closely resembles the common *hirundo* both in its general appearance and in its habits; so that nearly all that may be said in regard to the mode of nesting of the latter, its manner of flight, its cries and restlessness, its social characteristics, its solicitude for its young, and other traits, will apply with equal force to this species. As its name would imply, the Arctic Tern is by far the more northern, in its distribution, of the two species, and is found breeding to the highest point of northern latitude, where the other is found — if at all — only in limited numbers. It may be met with in all the Arctic Regions of America and the Old World.

It has been seen occurring in abundance by Mr. Kennicott at Fort Resolution and Fort Yukon; by others at Fort Rae, Anderson River, Slave River, Slave Lake, Buffalo River, Mackenzie River, Fort Simpson, Big Island, and Peel's River; by Mr. MacFarlane on the Arctic coast; by Mr. Dall at Franklin Bay, Fort Anderson, Rendezvous Lake, Swan Islands, the Lower Anderson, and Nulato; by Mr. Bischoff at Kadiak.

On the eastern coast of America it breeds from Southeastern Massachusetts to the most extreme points of Greenland, in latitude 82° 34′, and on the western coast of Europe from Great Britain to Iceland.

Captain H. W. Feilden ("Ibis," October, 1877) found this species breeding in Smith's Sound at all the localities visited on the route of the expedition. On a small islet off the north end of Bellot's Island (latitude 81° 44′) he saw several pair breeding, August 21. The land at that time was covered with snow, and on that islet it was three inches deep. In one nest he found a newly hatched Tern, which seemed quite well and lively in its snowy cradle. The parent birds had thrown the snow, as it fell, out of the nest, which was surrounded by a border of snow marked by their feet and raised two inches above the general level. Birds were seen as early as June 16 in 1876, and by the end of that month pairs were scattered at intervals along the coast. A nest scraped in the gravel, containing two eggs, was found June 27; and during the first week in August a pair of young birds, nearly ready to fly, were seen in latitude 81° 50′. This Tern is included by Dr. Bessels in his list of the birds procured at Polaris Bay.

The Messrs. Godman found the Arctic Tern breeding along the whole of the northwest coast of Norway. In Iceland, according to Professor Newton, it has many breeding-places in various parts of that island. According to Faber, it arrives there about the middle of May, and departs about the end of August; although generally a few young ones remain a month longer on the southern coast. Professor Newton also states ("Ibis," 1865) that the Arctic Tern is common in Spitzbergen, breeding as far north as latitude 80°, where Dr. Malmgren found it in countless numbers in July. It was not abundant in Ice Sound, but it was quite common among the Thousand Islands, where its eggs are much sought after by the walrus-hunters who resort thither. Martin mentions the excellence of these eggs as food; and since his time visitors to Spitzbergen have not failed to appreciate this fact. Dr. Malmgren first observed this bird on the 10th of June in Treurenberg Bay, feeding principally on surface-swimmers, as crustaceans, mollusks, and the like. Messrs. Evans and Sturge mention meeting with a few Arctic Terns in Western Spitzbergen late in June; but the birds did not appear to be breeding, nor were any eggs of this species seen.

According to Middendorff, this species occurs in the tundras of the northern portions of Siberia. Mr. G. Gillett found it numerous both on the western and on the eastern coasts of Nova Zembla; and Von Heuglin also observed it along the same coast in small flocks.

Mr. Wheelwright speaks of this species as being the commonest of the Terns in the heart of Lapland; and this is the only species of Tern mentioned by Sommerfeldt in his list of the birds of Vardö, near the North Cape, who did not find it on the west or northwest coast of Scandinavia.

Dr. Walker found it on the coast of Greenland, near Godthaab; and it is also given by Professor Reinhardt as being a resident species of that island. Mr. Bernard Ross met with it on Great Bear Lake; and Mr. Murray received it from Hudson's Bay, from which region Captain Blakiston also procured specimens.

Mr. Boardman informs me that this species breeds abundantly on the coast of Maine, near Calais; and it is also said to breed on islands in the fresh-water lakes and ponds in the interior both of Maine and New Brunswick. Giraud did not recognize it as one of the Terns which breed in and about the sea-coast of Long Island, and it probably is not found south of Muskegat.

Captain Elmes ("Ibis," 1869) mentions finding this Tern breeding on a small rock among the Outer Hebrides, called Hysker, although it was at a considerable distance from their feeding-grounds; and he noticed that none of the nests contained more than two eggs. This was the case at all the other points he visited; while the common Tern (*S. hirundo*), which he states to be also abundant in the Hebrides, usually lays three.

Yarrell regards this species as being more common than the bird usually known as the common Tern, particularly in high northern latitudes. It is found in large numbers in the Faröes, and is the Tern described by Graba under the name of *S. brachytarsa*, and said to frequent that group of islands. Mr. Dunn states that it is abundant in the summer in the Orkney and Shetland Islands, as well as in the Outer Hebrides — where, according to Macgillivray, it is much more common than *S. hirundo*. Mr. Thompson states that it occurs in large numbers, and is widely distributed through Ireland.

The several Arctic voyagers have found this species in great abundance at all the points which they have visited. It was found breeding on Melville Peninsula, and generally on the islands and beaches of the Arctic Sea.

Generally this Tern is found in colonies by itself, Muskegat being the only instance where I have seen it mingling with other species. In 1842 I there found this species in company with the *hirundo* and the *Dougalli.* In 1869, when Mr. Allen visited this island, the breeding-place of this species seemed to be apart from the others. On the Island of Damariscotta, on the coast of Maine, and on a small island near Bristol, I found this species breeding in distinct colonies, no other bird being in the neighborhood.

Richardson found this Tern breeding generally on the shores and islands of the Arctic Ocean, and in great abundance. He describes its eggs as being obtuse at one end and tapering at the other, varying in ground-color from a light yellowish brown to a bluish gray, and marked with many irregular brown spots of different degrees of intensity. They are said to be deposited upon a gravelly beach or upon sand; and the parents show great anxiety for their safety, and are very bold in their endeavors to defend them.

Mr. Hearne refers to this species as the "Black-head," and speaks of it as being the smallest Gull met with by him. It is said to visit the coast of Hudson's Bay in such vast numbers that it is frequently seen in flocks of several hundred; and he has known their eggs to be gathered by bushels on a very small island. These eggs are very delicate eating, the yolks being equal to those of a young pullet, and the whites of a semi-transparent azure; but the bird itself has always a fishy taste, and is unsuitable for food. The affection of this species for its young is so strong that when any person attempts to rob its nest it will fly at him, and approach so near as to touch his head with its pinions; and will frequently follow the plunderer to a considerable distance, with unusual screams and noisy outcries. This species was found in the farthest northern localities visited by Hearne, and was observed to leave the Arctic Regions early in the fall.

Mr. Dall found this species abundant in the Shumagins, in certain localities, and especially on a small island in Popoff Strait, called Range Island. There a large number of the eggs, mostly in an incubated condition, were obtained in the months of June and July. He did not notice any of these birds at Unalashka; but he speaks of them as being abundant on the marshes near the sea-coast and also everywhere on the Yukon, where they were seen in large flocks hovering over the water, and often appearing as if suspended in the air, the birds remaining in the same place, almost motionless, for ten or fifteen minutes. At other times they were sitting on sticks of driftwood, chattering to one another, or gathering around a shoal of young minnows, diving, eating, and screaming with equal vivacity. They are perfectly fearless, especially when a companion has been wounded, or when their young are menaced. They gather in large numbers around a wounded companion, cry to it, and endeavor to assist it to rise. Their note, when not disturbed, is between a hiss and a whistle; when alarmed, it is a sharp cry, like the scream of a Gull; and when at rest, they keep up a kind of chatter. They are extremely inquisitive, and will follow a boat for miles, keeping a short distance from it. The young were obtained in the down, June 22, near Fort Yukon, and had from the first coral-red legs and bills. The eggs were found, June 14, at the mouth of the Yukon River.

Mr. MacFarlane, Mr. Lockhart, and Mr. Kennicott found this species abundant in all parts of the Arctic Regions, breeding in various situations on the ground, usually in large companies, but occasionally in single pairs, some on the bare prairie, others on the beach, or on islets in a lake, or in the sea.

Some writers speak of the number of eggs in a nest as never more than two. Mr. Dunn, writing of the Orkneys, speaks of it as three or four, and adds that this bird is seldom seen except when on the wing, in pursuit of the small coal-fish which abound in the harbors and inlets of that region. It darts down upon them with great rapidity as they swim on the surface.

Mr. Macgillivray, writing of the Hebrides, says that on several of the smaller and less frequented islands many hundred eggs of this bird were taken in a few minutes, and that it was difficult to move without treading on them. A scattered band of Terns hovered about the party, uttering incessant cries, and darting down to within a few feet of the invaders of their peaceful territory.

In May, 1842, during the prevalence of high winds, the coast in the neighborhood of Bristol, England, was visited by an extraordinary flight of this Tern. They were in such vast numbers that three hundred and more were killed with stones and other missiles, and many were taken alive. Flocks were also observed at other places along the Channel coast, and a simultaneous appearance of this bird took place over a large extent of country in that vicinity. The wind had been blowing hard for several days from the east and northeast, but suddenly changed to the westward, the gale still continuing. The birds were evidently on their route to their northern summer quarters, and their intended course was thus interfered with by the prevalence of unusually strong winds.

Audubon found this species breeding in large numbers at several different points on the coast of Labrador, and always in colonies unmixed with any other species. He found them sitting closely upon their eggs at all times.

The eggs of this Tern are represented in the Smithsonian Collection by specimens from the Yukon River, the Arctic coast, Sable Island, Fort Anderson and the region east, Range Island, Alaska, Kutleet, Great Whale River, and Greenland. In my own collection are eggs from Muskegat Island and Beverly, Mass., and from the coast of Maine. These eggs vary extraordinarily, some being unspotted, and having a ground-color of a grayish white, others being profusely blotched and spotted, while the ground-color is either a tawny drab, a grayish green, or an olive-brown. The markings are generally of a dark brown, inclining to black. Five eggs, taken as typical of their variations in size and shape, present the following measurements: 1.50 by 1.10 inches; 1.55 by 1.20; 1.60 by 1.15; 1.65 by 1.15; 1.75 by 1.25.

Sterna Dougalli.

THE ROSEATE TERN.

Sterna Dougalli, MONTAGUE, Orn. Dict. Suppl. 1813. — NUTT. Man. II. 1834, 278. — AUD. Orn. Biog. III. 1835, 296, pl. 240; Synop. 1839, 320; B. Am. VII. 1844, 112, pl. 437. — COUES, B. N. W. 1874, 688; 2d Check List, 1882, no. 800. — SAUNDERS, P. Z. S. 1876, 652. — RIDGW. Nom. N. Am. B. 1881, no. 688.

Sterna paradisea, KEYS. & BLAS. Wirb. Eur. II. 1840, 97 (not of BRÜNN, 1764). — LAWR. in Baird's B. N. Am. 1858, 863. — BAIRD, Cat. N. Am. B. 1859, no. 692. — COUES, Key, 1872, 321; Check List, 1873, no. 569.

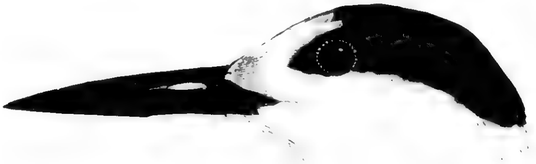
Sterna gracilis, GOULD, P. Z. S. 1847, 222 (Australia); B. Austr. VII. 1848, pl. 27.

HAB. More southern portions of Palæarctic Region, Australia, and Atlantic coast of North America, north to Massachusetts, south, in winter, nearly throughout the West Indies and Central America; both coasts of the latter region. Bermuda (breeding).

SP. CHAR. *Adult in summer:* Entire pileum and nape, down to the lower edge of the eyes uniform deep black. Above, delicate pale pearl-gray, becoming gradually silvery white on the upper tail-coverts and tail; tips of the secondaries, and edges of inner webs of primaries, pure white. Outer primary with the outer web dark slate; inner webs of three outer primaries white, with a stripe of silvery gray next the shaft, the white extending to the extreme tip of the feathers;

remaining quills light silvery gray, the inner web broadly edged with white. Lateral and lower part of head and neck (including lower half of the lores and extreme lower part of the nape), with entire lower parts, pure white, strongly tinged in fresh specimens with delicate rose-pink. Bill black (reddish basally, in life); iris brown; legs and feet bright red (in life). *Adult in winter:* Similar, but forehead and anterior part of crown white, the latter shaded with grayish and indistinctly streaked with darker; orbital region, occiput, and upper part of nape uniform black. *Young, first plumage:* Pileum and nape pale buffy grayish, finely mottled or sprinkled with darker, and streaked, especially on the crown, with dusky; orbital and auricular regions dusky blackish; remainder of the head, extreme lower part of the nape, and entire lower parts, white, the nape, and sometimes the sides of the breast, finely mottled with buffy gray. Back, scapulars, wing-coverts, rump, upper tail-coverts, and tail, pale pearl-blue, the back and scapulars overlaid with pale buff, irregularly mottled with dusky, each feather with a submarginal dusky V-shaped mark; primary coverts and primaries darker bluish gray, edged with paler, the inner webs of the latter broadly edged with white. Tail-feathers marked near their ends much like the longer scapulars, their outer webs rather dark grayish. Bill brownish dusky; feet dusky.

Summer plumage.



Winter plumage.

Total length, about 14.00 to 15.50 inches; extent, 30.00; wing, 9.25–9.75; tail, 7.25–7.75, the depth of its fork, 3.50–4.50; culmen, 1.50; depth of bill at base, .35; tarsus, .85; middle toe, .75.

The beautiful Roseate Tern is almost cosmopolitan in its widely extended geographical distribution; but in North America it appears to be confined to the Atlantic Region, as I find no reference to its existence on any part of the Pacific coast; nor does any writer mention meeting with it in the interior. It is also exclusively maritime in its residence.

Mr. Salvin found a few birds of this species breeding among the Keys on the coast of Honduras late in April, but makes no mention of it as occurring on the west coast. Léotaud refers to it as being a common bird in Trinidad, and as having habits nearly identical with those of *S. maxima.* It is not mentioned by Dr. Gundlach as occurring in Cuba; yet it seems hardly possible that it should not be one of the common birds of that island, since it is so abundant in Florida at all seasons of the year. Neither is it included by Mr. Gosse among the birds of Jamaica. Dr. Bryant did not meet with it breeding either in Florida or in the Bahamas. In the Bermudas, according to Major Wedderburn, this species breeds in considerable numbers, appearing there about the end of April. It is very common at Spanish Point and in Castle Harbor. Its eggs were procured on Gurnet-head Rock June 17, 1848, and others were taken as late as the 1st of August; from which it was inferred that this bird rears two broods in a season. It is not seen at Bermuda during the winter.

This species is found along the Atlantic coast as far east, probably, as Maine, and thence to Florida, and probably along the coast of the Gulf of Mexico to Central America. A few once bred on a small island near Tennant's Harbor, St. George, Me., and at the Isles of Shoals. Mr. Allen has found it breeding off Ipswich, and Dr. Samuel Cabot off Beverly. In 1840 I obtained its eggs on Egg Rock, Nahant; and it still breeds in considerable colonies on Muskegat, on the Elizabeth Islands, on the coasts of Connecticut and New Jersey, on islands near Cape Charles, and at other points on the coast from the Chesapeake to Key West. On Long Island, N. Y., Giraud mentioned it as not common. He regarded it as rare, and as being only occasionally seen in company with the common *hirundo.*

In Great Britain — where this was formerly regarded as being a comparatively rare species — it seems to have increased in numbers, as it is found to be more abundant than it once was. This bird was first recognized as a British species by Montagu in 1813; and since then it has been found breeding at various stations frequented by other Terns, and has been ascertained to be a regular summer visitant, though not in very large numbers. It breeds on a small rocky islet near the entrance to Belfast Bay, Ireland, on islands in the Firth of Solway, and on the Farne Islands, on the east coast of England. At the latter place, according to Selby, its advent as a new species was noted by the lighthouse-keeper, and afterward confirmed by the writer. Since then the colony has greatly increased, and has now become quite numerous; and a second colony has been formed upon another island — one of the Walmseys. Mr. Selby says that the old birds may be easily recognized among hundreds of those of the other species by their peculiar and buoyant flight, long tail, and by their note, which may be expressed by the word *crake,* uttered in a hoarse grating key. The eggs are larger than those of the Arctic Tern; and the young differ from those of that bird in their downy as well as in their feathered stage.

The Roseate Tern is included among the birds of Germany, and was found by Temminck in August and September on the coast of Holland, breeding also on several small islands on the coast of Picardy and Brittany. Savi includes this species among the birds of Italy; and specimens of it have been received from Madeira and from the Cape of Good Hope. Mr. Gould has skins brought from the Malabar coast.

According to Audubon, the Roseate Tern spends the breeding-season in considerable numbers along the southern shores of Florida; where, at different times, he met with flocks of thirty or more pairs breeding on small detached islands. Their full number of eggs he found to be three. These differ considerably in size and marking, and are of an oblong oval shape, narrowed at the smaller end, of a dull buff or clay-color, sprinkled and spotted with different tints of umber and light purple. He found them deposited on the bare rocks, among the roots of the grasses, and in bright weather left exposed to the rays of the sun. Toward night the parent sat upon her eggs.

Audubon describes this Tern as being a noisy, restless bird, emitting a sharp shrill cry whenever its breeding-place is approached; and adds that it is buoyant and graceful in its movements, but unsteady and flickering in its flight. It will make a dash in one direction, and be off in another, with the quickness of thought. When fishing, it plunges perpendicularly downward like a shot, immersing part of its body — and immediately reascending. Its food consists of small fish and mollusks. In the spring it returns to those islands regularly about the 10th of April, and departs southward early in September.

In 1842 I found this species breeding in a large colony on the low sandy Island of Muskegat, where they shared its large area with the common species and the Arctic, as well as with the Laughing Gull. There did not then appear to be any separation of the different species, but all were intermingled. The larger number were of the roseate species. In 1852 I visited a small island of about fifty acres near Cape Charles, and about eighteen miles northeast from Old Point. It was occupied by about thirty pairs of this species, but by no other Tern. And in the summer of 1873 I had an opportunity of observing another small colony on the Island of Penikese. In the last-named instance the larger part of the island was in the exclusive occupation of the *hirundo;* the low marshy portion was occupied by the Least Tern; and a small high promontory by the Roseate Tern. It was the month of August, and this species, having been uninterrupted in its breeding, had ceased laying, nearly all its young having left their nests, but being still cared for by the parent birds.

There is a noticeable difference between this and both the *hirundo* and the *paradisæa*, which, having been once carefully studied, will not be lost sight of. The present species is easily distinguished in its flight by its long and graceful tail-feathers, its more brilliant under parts, and its more regular and even motions in flight. Its voice is different, less sharp, more hoarse, and its cry of *crēēk* is more prolonged and less frequently enunciated, than is the case with the other species named. It is less clamorous when its nest is approached, hovers overhead at a higher point, and rarely makes a rush at one's head, as does the impetuous *paradisæa.* At Cape Charles, where the eggs were fresh, all the birds kept at a respectful distance, and none could be procured. At Muskegat, where the eggs were incubated, the birds could easily be obtained; but it soon ceased to be necessary, as they could readily be identified. At Penikese, where they occupied the part of the island most remote from the dwellings, they were much less disturbed by the presence of intruders; and only when their young were handled, or made to utter an outcry, did they change their calm inspection of our proceedings for an excited and clamorous utterance of their displeasure — rarely making, however, any attempt to attack the intruder or swoop down toward his head.

Captain O. N. Brooks, of Guilford, Conn., who is the proprietor of Faulkner's Island, in the Sound, where a large colony of this Tern breed, has furnished me, through Dr. Wood, of Windsor Hill, some interesting notes on its habits, which are here given in substance. It makes its appearance about the 15th of May, seldom varying three days from this date. At first six or eight of these birds are seen well up in the air. These hover over the island a while, and then disappear. The next day the same individuals return, with an addition of twelve or more to their number; but none of them alight on the island until the third or fourth day. After this, if nothing disturbs them, their number increases very fast. They begin to lay about the 1st of June, never varying three days from that time. While some gather a few dry weeds or a little dry seaweed, others make only a hollow in the sand; and some deposit their eggs on the stones without any nest at all. They usually lay two eggs, though some nests are found to have three, and some four, eggs. When four are found they are never alike; when three, they are sometimes alike, and sometimes one of them differs both in shape and color. Where there are only two, they are usually very much alike.

The male feeds its mate while she is sitting, and may frequently be seen carrying fish to the island, which is often found deposited near their nests. The young bird begins to run soon after it is hatched, and when disturbed, it leaves its nest and hides among the stones, or in grass and weeds. When the young one is large enough to fly, the parent takes it out alone to practise flying. At first it ventures only a few rods, but soon is able to fly a mile or more, but always accompanied by the old bird; the latter never taking more than one of her young out with her at the same time. The islet on which these birds breed contains a quarter of an acre of upland covered with grass and weeds; and while they were thus engaged they were not disturbed. During the month of June only the eggs laid on the stones and sand below the upland — averaging in number a hundred or more a day — were collected, and they are said to be much nicer in flavor than those of the domestic Fowl. The young birds reach their growth by the 20th of August, and their stay after September 1 depends upon the abundance of their food. When fish is plentiful they remain until the first of October. They feed entirely on fish, which they catch by diving. They are greatly troubled by the depredations of Hawks, and in one year — 1863 — the birds were driven away before their young were ready to fly. The Duck Hawk seems to be their most troublesome enemy.

The eggs of this species have a ground-color of a pale buffy drab, varying to a pale grayish green. The spottings are of a lilac-gray and blackish brown. Five eggs from New England present the following variations in measurement: 1.55 by 1.15 inches; 1.60 by 1.15; 1.70 by 1.25; 1.75 by 1.20; 1.75 by 1.10.

Sterna aleutica.

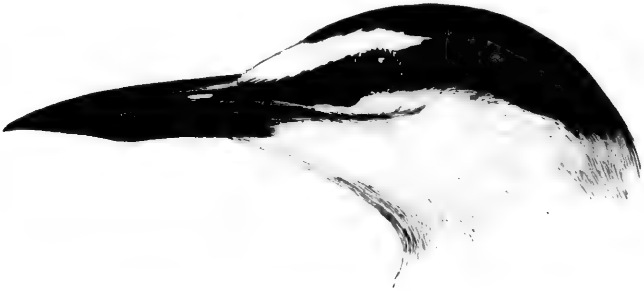
THE ALEUTIAN TERN.

Sterna aleutica, BAIRD, Trans. Chicago Acad. Nat. Sci. I. 1869, 321, pl. 31, fig. 1 (Kadiak). — DALL & BANN. ib. 307. — COUES, Key, 1872, 322; Check List, 1873, no. 572; 2d ed. 1882, no. 803; Birds N. W. 1874, 696. — SAUNDERS, P. Z. S. 1876, 664. — RIDGW. Nom. N. Am. B. 1881, no. 689.

Sterna Çamtschatica, "PALL.," FINSCH, Abh. Nat. III. 1872, 85 (not of PALLAS).

HAB. Coast of Alaska from Kadiak to Norton Sound.

SP. CHAR. *Adult, in summer:* Upper half of head and nape deep black, the forehead white, this color extending back about .50 of an inch medially, and about twice as far, or to the posterior angle of the eye, laterally, the black forming a stripe across the lores, from the eye to the bill. Upper parts deep plumbeous-gray, the primaries slightly darker, with white shafts, the inner webs mostly white, with a broad stripe next the shaft, and a narrow edging, of plumbeous. Tips of secondaries, upper and lower tail-coverts, tail, cheeks, malar region, chin, and entire lining of the wing, including maxillars, pure white; remaining lower parts pale pearl-gray, fading insensibly into the white of the chin and crissum; plumbeous of the rump very abruptly defined against the white of the upper tail-coverts. Bill and feet deep black; iris brown. *Downy young* (No. 97160, St. Michael's, Alaska, July 29, 1880; E. W. NELSON): Above, rather light sooty brown, confusedly marbled or mottled with dusky, the head with the light brown predominating, and the dusky markings more distinct. Forehead, chin, entire throat, and sides of the neck, uniform sooty slate; jugulum and breast pure white; sides, flanks, abdomen, and anal region, sooty gray. Bill pale yellowish brown (flesh-color in life), with black tip; legs and feet pale yellowish brown (flesh-color in life?). No. 97162, same locality and date, differs in having the ground-color of the upper parts decidedly more buffy, the dark marblings coarser and more distinct; the whole anterior portion of the crown, for the space of about half an inch, together with the superciliary region, is immaculate brownish buff; the throat is rather lighter sooty, the sides, etc., paler grayish. From the downy young of *S. paradisæa*, the above described specimens may be distinguished by the much less fulvous coloring of the upper parts, and much darker as well as decidedly more gray color of the sides and posterior lower parts. In short, while the general coloration is bright tawny buff in *paradisæa*, the general aspect is decidedly sooty in *aleutica*. *Young, first plumage:* Forehead, lores, crown, and entire nape smoky grayish brown, darkening on the occiput into fuliginous-dusky, this color extending anteriorly on each side nearly or quite to the eye; the smoke-color of the nape extending over the sides of the neck to the sides of the breast, sometimes even tinging the jugulum and foreneck. Back, scapulars, inner wing-coverts, and tertials dull slate-black, broadly and sharply bordered, especially terminally, with deep yellowish ochraceous; remainder of the wing plumbeous, the greater coverts and secondaries tipped with white; primaries as in the adult; upper part of the rump dark brownish slate, the feathers narrowly tipped with pale fulvous, this preceded by a dusky subterminal bar; lower part of rump and upper tail-coverts plumbeous-gray, the lateral coverts nearly white, and the longer tipped with buff; tail pale bluish gray, the feathers growing dusky subterminally, and tipped with deep ochraceous-buff; inner webs of the rectrices paler than the outer, or nearly white; outer web of exterior feather almost entirely pure white. Lower parts entirely white, the under side of the head and neck, as well as the sides of the breast, more or less stained or clouded with smoke-brown. Maxilla dusky; mandible light reddish (brownish in dried skin), the terminal third or fourth black; *legs and feet clear light reddish.*



Total length, 13.25 to 14.75 inches; extent, 30.00 to 31.00; wing, 9.75–10.75; tail, 6.50–7.00; depth of its fork, 2.40–3.75; culmen, 1.25–1.40; depth of bill through base, .38; tarsus, .60–.75; middle toe, without claw, .80–.85.

The young of *Sterna aleutica* may be very easily distinguished from that of *S. paradisæa* — the only other Tern found in any part of Alaska — by the following differences of coloration: (1) The distinctly cinereous rump and upper tail-coverts; (2) the pure white, instead of uniform blackish, outer webs of the lateral rectrices; (3) the deep smoke-brown hue of the forehead, crown, nape, and sides of the breast; (4) the broad white anterior border to the forearm; (5) the dusky stripe near the edge of the inner webs of the primaries; and (6) the much darker general coloration, and especially the blackish dorsal region, with wide deep ochraceous borders to the feathers.

The adult needs no comparison with any other species of the genus.

Our information in regard to the specific habits of this newly discovered species and the extent of its geographical distribution is still quite meagre. It is not probable that its habits vary greatly from those of other Terns, which in all the members of this family are quite similar. The species was first met with, and its eggs procured at the same time, by Mr. Bischoff at Kadiak; and examples of the birds and eggs have since been obtained from different parts of Alaska. Mr. Dall was informed that it was common in the Aleutian Islands, and expected to meet with it there; but none were seen.

Four eggs of the Aleutian Tern (Smithsonian Institution No. 1347), procured by Mr. Bischoff on the Island of Kadiak, have the following measurements: 1.65 by 1.15 inches; 1.75 by 1.15; 1.85 by 1.10; 1.85 by 1.15. They all have a ground-color of a brownish and a greenish olive; the markings are large, partly longitudinal, confluent, and in patches, and of a dark clove-brown.

Sterna antillarum.

THE LEAST TERN.

Sterna minuta, Wils. Am. Orn. VII. 1813, 80, pl. 70, fig. 2 (not of Linn.). — Aud. Orn. Biog. IV. 1838, 175, pl. 319; Synop. 1839, 321; B. Am. VI. 1844, 119, 439.
Sterna argentea, Nutt. Man. II. 1834, 280 (not of Max. 1820).
Sternula antillarum, Less. Descr. Mam. et Ois. 1847, 256.
Sterna antillarum, Coues, Pr. Acad. Nat. Sci. Philad. 1862, 552. — Scl. & Salv. P. Z. S. 1871, 571. — Saunders, P. Z. S. 1876, 661. — Ridgw. Nom. N. Am. B. 1881, no. 690.
Sterna superciliaris, b. *antillarum*, Coues, B. N. W. 1874, 692.
Sterna superciliaris antillarum, Coues, 2d Check List, 1882, no. 801.
Sterna frenata, Gamb. Pr. Acad. Nat. Sci. Philad. 1848, 128. — Lawr. in Baird's B. N. Am. 1858, 864. — Baird, Cat. N. Am. B. 1859, no. 694.
Sterna superciliaris, Gundl. & Caban. J. f. O. V. 1857, 232 (not of Vieill.). — Coues, Key, 1872, 332; Check List, 1873, no. 570.

Hab. Temperate and tropical North America in general; south to Trinidad. Both coasts of Central America; on the Atlantic coast north, casually, to Labrador; on the Pacific side, north to California.

Sp. Char. Smallest of the Terns (wing less than seven inches). *Adult in summer:* Pileum and nape deep black, the forehead covered by a broad lunule of white extending back laterally to the eyes, the lores being crossed by a black line or narrow stripe extending from the eye to the lateral base of the maxilla, immediately behind the nostril. Entire upper parts, including lower part of the nape, upper tail-coverts, and tail pale pearl-gray, deepest on the dorsal region and wings. Two to three outer primaries dusky slate, the inner webs broadly edged with white; remaining quills pale pearl-gray, like the coverts, the edge of the inner webs white. Entire lower parts pure white. Bill bright yellow, usually (but not always) tipped with black; iris dark brown; legs and feet bright orange-yellow. *Adult, in winter:* Similar, but lores, forehead, and crown grayish white (purer white anteriorly), an occipital crescent and a stripe forward from this to and surrounding the eye blackish. Bill dusky; legs and feet dull yellowish. *Young, first plumage:* Somewhat similar to the winter plumage, but humeral region marked by a wide space of dusky slate, the scapulars and interscapulars with submarginal V- or U-shaped marks of dusky, the crown streaked and the occiput mottled with dusky, and the primaries darker than in the

adult. Bill dusky, brownish toward the base; feet brownish. *Downy young:* Above, grayish white, finely mottled with dusky grayish, the head distinctly marked with irregular dots of dusky black; lower parts entirely immaculate white. Bill dull yellow, tipped with dusky; legs and feet clear pale yellow.

Total length, about 9.00 inches; extent, 20.00; wing, 6.60; tail, 3.50, its fork, 1.75; culmen, 1.20; depth of bill at base, .28; tarsus, .60; middle toe, with claw, .72.

This little Tern has several near allies in different parts of the world. The differential characters of the American species and their European representative are as follows: —

A. *Lower parts white.*	
a. Rump and tail white.	1. *S. minuta.*[1]
b. Rump and tail pearl-gray.	
b'. Bill more or less black tipped. Wing less than 7.00 inches. Feet bright yellow	2. *S. antillarum.*
b''. Bill without black tip. Wing 7.00 inches or longer. Feet olivaceous yellow. Upper parts darker gray. Bill larger and much stouter, and lateral rectrices more elongated	3. *S. superciliaris.*[2]
B. *Lower parts gray*	4. *S. exilis.*[3]

The Least Tern of North America appears to be restricted to the Atlantic coast; occurring occasionally in the interior, along the banks of our larger rivers. I have never met with it north of Southern Massachusetts; but Mr. Boardman informs me that it is occasionally seen in midsummer as far east as the St. Croix River and the Passamaquoddy — where, however, it is very rare. Audubon claims to have found this species breeding off Labrador, in June, 1833, and to have again observed it on Newfoundland on the 14th of August; but I can find no corroboration of its presence beyond the Bay of Fundy.

This species is supposed to leave the United States in the month of October, and to return here in the following April. It is more or less common in several of the West India Islands. In Cuba it is undoubtedly a resident, and breeds there. In

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[1] STERNA MINUTA.

Sterna minuta, LINN. S. N. I. 1766, 228. — KEYS. & BLAS. Wirb. Eur. 97. — NAUM. Vög. Deutschl. X. 1840, 145, pl. 254. — MACGILL. Man. II. 1840, 234.
Sterna metopoleucus, S. G. GMEL. Nov. Comm. Petrop. XV. 475, pl. 22.
Sterna fissipes, BREHM, Vög. Deutschl. 790 (not of LINN.).
Sterna pomarina and *danica*, BREHM, t. c. 791.
Lesser Tern, YARR. Brit. B. ed. 2, III. 519, fig.; ed. 3, III. 524, fig.; et AUCT.
Hab. Palæarctic Region, to India and Cape of Good Hope.

[2] STERNA SUPERCILIARIS.

Sterna superciliaris, VIEILL. Nouv. Dict. XXXII. 1819, 126. — SCL. & SALV. P. Z. S. 1871, 571. — SAUNDERS, P. Z. S. 1878, 662.
Sterna superciliaris, a. *superciliaris*, COUES, Birds N. W. 1874, 692.
Sterna maculata, VIEILL. Enc. Méth. 1823, 350.
Sterna argentea, MAX. Voy. I. 1820, 67; Beitr. IV. 1833, 871. — PELZ. Orn. Bras. 1870, 325.
Hab. Eastern South America, west to the headwaters of the Amazonian tributaries.

[3] STERNA EXILIS.

Sterna exilis, TSCHUDI, Faun. Per. Aves, 1846, 306. — SCL. & SALV., P. Z. S. 1871, 572. — SAUNDERS, ib. 1878, 663.
Sterna lorata, PH. & LANDB. Wiegm. Archiv, 1863, pt. I. 124.
Sternula loricata, GRAY, Handl. III. 1871, 121.
Hab. Coast of Peru and Chili.

There are, in addition to these, *S. sinensis*, GM. (China to Australia); *S. sumatrana*, RAFFL. (Ceylon to the Red Sea); *S. nereis*, GOULD (Australia and New Zealand); and *S. balænarum*, STRICKL. (from the Cape of Good Hope).

Jamaica it is not common, and Mr. Gosse only met with a single chance individual. It is resident in Central America.

Mr. Salvin obtained a skin of this Tern at Coban, in Guatemala, but was not able to ascertain just where it had been procured. He afterward found this species breeding on the coast of Honduras in the latter part of April. As he approached Gassey Key, the Terns rose from the land in a cloud. On this key about a hundred pairs had assembled to lay, and numbers of nests were already occupied, each containing one, two, or three eggs — nearly all of the nests being mere depressions in the sand.

Léotaud mentions this species as being one of the resident birds of Trinidad, living in company with the other Terns, and having, in all essential respects, the same habits.

Mr. Dresser mentions it as being common on the coast of Southern Texas during the summer. He often met with it about the lagoon near Matamoras, and also found it abundant about the mouth of the Rio Grande. In June, 1864, it was breeding in West Galveston Bay, on the small shell-bars or sand islets, but not on the mainland. The eggs were fresh, and he was told that it breeds late in the season. Mr. Ridgway found it very abundant on Cobb's Island, Va., where it was nesting on the dry sand in isolated colonies. Its usual note was a sharp squeak, much like the cry of a very young pig following its mother.

According to Giraud, this is a common species on Long Island, and thence southward, having a very extended range; returning to that locality early in May, and departing southward early in the autumn. It feeds on various kinds of insects, as well as on small fish. About the 25th of May or the 1st of June the female begins to lay. The eggs are dropped on the dry and warm sand, the temperature of which during the day is fully sufficient for the purposes of incubation; as the sand is sometimes so hot that one can scarcely bear the hand in it for a few moments without inconvenience. The wonder would therefore be greater should the bird sit on her eggs during the day, when her warmth is altogether unnecessary, and perhaps injurious; it seems perfectly reasonable that she should cover them only at night, or in wet and stormy weather. Giraud states that the eggs are generally four in number, and placed on the flat sand, safe beyond the reach of the highest summer tide. They are described by him as being of a yellowish-brown color, blotched with rufous. Giraud and Wilson give the length of the egg as 1.75 inches; but this is a mistake.

In 1842 I visited a small sandy island called Tuckernuk, lying between Muskegat and Nantucket Point, which was then supposed to be the most northerly locality in which this species bred in any considerable numbers. This colony, which was then one of considerable size, is now nearly or quite exterminated; and at the time of my visit it was very evident that constant spoliation would ere long result in its extermination. In the summer of 1842, and again in the following year, as we approached the shore the birds all rose and hovered over the land, resembling a small white cloud. They were quite as fearless as the Arctic Terns; and a stronger comparison could hardly be used. For when either of these birds has young or incubated eggs, it seems to fear nothing. The Terns dashed about in rapid flight, now this way, now that, plunging at our heads, but always turning to one side just before touching us. A few of the most interested made these demonstrations, while their companions hovered about us like a moving cloud of witnesses, all of them joining in the clamor of indignant and plaintive cries. The eggs were in slight depressions made in the sand, with no lining whatever.

In the Smithsonian Collection there are eggs of this species from Ipswich, Mass.;

New Jersey; North Carolina; Georgia; the Tortugas; and San Diego, Cal. The number found in a nest varies from one to four; but the last number is rarely found, and probably the same parent never deposits more than three eggs — perhaps not more than two. The ground-color is a very uniform shade of light buff, becoming paler with age. The spots are for the most part small, evenly distributed, colored a lavender-gray and burnt umber. Four eggs in my own collection, from Tuckernuk, measure 1.20 by .96 inches; 1.25 by .96; 1.24 by .91; 1.23 by .94. A few in the Smithsonian Collection measure 1.30 by 1.00. The smallest length is 1.20, and the least breadth .91. In some descriptions the ground-color of these eggs is spoken of as being a greenish white; but I have never found any with the least tinge of that color. In most examples the spots are small and evenly distributed; occasionally they are in large blotches, and in a few instances they form a confluent ring.

Sterna fuliginosa.

THE SOOTY TERN.

Sterna fuliginosa, Gmel. S. N. I. ii. 1788, 605. — Wils. Am. Orn. VIII. 1814, 145, pl. 72, fig. 7. — Nutt. Man. II. 1834, 284. — Aud. Orn. Biog. III. 1835, 263; V. 1839, 641, pl. 235; Synop. 1839, 317; B. Am. VII. 1844, 90, pl. 432. — Lawr. in Baird's B. N. Am. 1858, 861. — Baird, Cat. N. Am. B. 1859, no. 688. — Coues, Check List, 1873, no. 573; 2d ed. 1882, no. 804. — Saunders, P. Z. S. 1876, 666. — Ridgw. Nom. N. Am. B. 1881, no. 691.
Sterna (Haliplana) fuliginosa, Coues, Key, 1872, 322; B. N. W. 1874, 698.
Sterna serrata, Forst. Descr. An. ed. Licht. 1844, 276.
Sterna guttata, Forst. t. c. 211 (young).
Anous l'Hermenieri, Less. Descr. Mam. et Ois. 1847, 255 (young).
Sterna Gouldii, Reich. (*fide* Gray).
Sterna luctuosa, Phil. & Landb. Wiegm. Archiv, 1866, 126.
Sterna fuliginosa, var. *crissalis*, "Baird," Lawr. Pr. Bost. Soc. 1871, 285 (Socorro I.).

Hab. Intertropical and subtropical coast-regions, completely round the globe. In America, south to Chili, north, regularly to the Carolinas and Western Mexico; casually to Pennsylvania, Massachusetts, and Vermont.

Sp. Char. *Adult:* Forehead and upper part of the lores white, this color extending back laterally to the middle of the upper eyelid; a broad stripe across the lores (growing gradually narrower anteriorly), auricular region, crown, occiput, nape (broadly), and entire upper parts, fuliginous black, the outer pair of rectrices white, with the inner webs growing gradually blackish terminally. Entire lower parts, including axillars and lining of the wing, white, sometimes faintly tinged posteriorly with pale bluish gray. Bill deep black; "iris chestnut" (Audubon); feet black. *Young, first plumage:* Dark fuliginous, more dusky grayish below; lining of the wing, and

anal region, white; crissum pale smoky gray. Scapulars and wing-coverts distinctly but narrowly tipped with white. Lateral tail-feathers entirely blackish.

Average total length, about 16.50 inches; extent, 33.00 to 35.00; wing, 12.00; tail, 7.00–7.50, its fork, 3.00–3.50; culmen, 1.80; depth of bill at base, .50; tarsus, 1.00; middle toe, with claw, 1.20.

The series before us exhibits a marked difference between specimens from certain localities — quite sufficient, if constant, to characterize definable local races. Thus, examples from Florida and other parts of the Atlantic coast have the exterior pair of rectrices pure white, growing grayish-dusky terminally, the entire abdomen, anal region, and crissum being pure white. Those from Western Mexico (Socorro and Isabella islands) are the same as regards the rectrices; but the lower part of the abdomen, the anal region, and crissum, are light pearl-gray, in decided contrast to the white of the breast, etc. These constitute the var. *crissalis*, BAIRD. A specimen from the Hondou Islands, and another from Dog Island, South Pacific Ocean, are very similar to Florida examples; but the outer rectrices are pale gray to the extreme base, the terminal portion of the inner web dusky grayish for the extent of 2.50 inches. The posterior lower parts are also quite distinctly tinged with pale grayish. Three specimens from Palmyra Island (Dr. STREETS) resemble the last in the coloration of the lower parts; but the lateral rectrices are deep brownish gray throughout, the terminal portion dusky — this, in two examples, extending quite to the base of the outer web! The blackish of the nape is much narrower than in specimens from any other locality, and is much interrupted by the exposure of the whitish bases of the feathers.

The Sooty Tern is an intertropical species found in all parts of the globe, sporadically, between the 30th degree of north latitude and the same degree south. It is especially abundant in the islands off the southern coast of Florida and in various points in the West Indies. It is a great wanderer, and has occasionally been met with at a considerable distance from its usual residence.

According to Yarrell, a single specimen was shot, October, 1852, in England; and Naumann states that one was taken near Magdeburg, in Germany. During Captain Cook's voyage this species is said to have been met with several hundred miles from land. It is abundant about Ascension and Christmas islands, and appears to be common on some of the island groups of the South Seas. Mr. Gould includes it among the birds of Australia.

Mr. Salvin met with a few solitary birds of this species on the coast of Honduras in the latter part of April; but was told that they were much more abundant, and that they bred in large numbers at Cape Gracias a Dios. Mr. Dresser procured two specimens on the southern coast of Texas, but he did not meet with any breeding-place. In a voyage from England to Cape Town, Mr. Layard saw a flock of these Terns passing directly over the vessel, early in the morning, in lat. 10° 35′ S. Mr. J. C. Melliss ("Ibis," 1870) speaks of this species as occurring, although not very abundantly, at St. Helena. It inhabits the rocky islets off the coast, known as George's and Spury Island, in considerable numbers. It does not remain there all the year, but arrives about the end of December, and breeds during the months of January, February, and March. Much risk of life is run to obtain its eggs, which are brought to the market, and are regarded by some as a great delicacy. It seldom comes near the inhabited portion of the Island of St. Helena.

Mr. Edward Newton mentions ("Ibis," 1865) finding this species breeding on the Island of Rodriguez, near Mauritius. Von Heuglin met with it in pairs or in small flocks in the Red Sea, south of 14° north latitude, and on the Somali coast. It is also found — although rarely — on the guano island of Bur-da-Rebschi.

Captain Sperling ("Ibis," 1868, p. 286) gives an account of his visit to the breeding-place of this species on Ascension Island; the spot where these birds gather together for nesting purposes being called by the sailors "Wide-awake Fair." As he approached the place he noticed flocks of Terns converging from various parts of the ocean to a spot apparently about a mile in front of him, and toward which he proceeded; and on surmounting a low ridge the whole scene was disclosed. A gradual incline of a quarter of a mile terminated in a plain of ten or fifteen acres in extent, which was literally covered with these birds. This plain was surrounded by low mountains, except toward the side on which he stood. No description could convey an adequate idea of the effect produced by the thousands upon thousands of these wild sea-birds, hovering and screaming over this arid cinder-bed — the eggs and the young being scattered so thickly on the ground that in some instances it was impossible to avoid treading upon them. During the short walk down the slope, large flocks of parent birds hovered over their heads, and saluted the party with plaintive cries. On arriving within the precinct of the breeding-grounds the numbers of the birds increased. Large flocks were arriving in endless succession from seaward; others rose in clouds from the ground, and joining them, the whole assemblage wheeled around until he was almost made giddy by their gyrations. He sat down on a lump of cinder; and the birds being at length convinced that he was not there with hostile purposes, went on with their ordinary routine of incubation. There were young of all sizes, from the little callow nestlings, just hatched, to the newly fledged birds that fluttered and crawled like young Pigeons. There were also numbers of eggs exposed on the bare ground. In most instances the old birds sat, each on its own solitary treasure, hissing defiance as he approached, and fighting manfully if he attempted to remove it. The young were of a very light sooty color, both above and beneath, the ends of most of the feathers having a white spot the size of a pea, which gives to them a speckled appearance. Captain Sperling was informed that all these Terns leave the Island of Ascension as soon as the young can fly.

Colonel Grayson met with this species (variety *crissalis*) in the vicinity of the Tres Marias Islands, and also found it breeding on the small island of Isabella, near San Blas. It was not observed near the main shore, but usually far out to sea. It seemed to be semi-nocturnal in its habits, and to be a constant resident in the localities cited.

Examples from the Pacific, taken in the Wilkes Exploring Expedition, are identical with those found on the coast of the United States. This species was observed by Mr. Peale throughout all the islands of the Dangerous Archipelago, and on most of the coral islands of the Pacific. At Honden Island it was found in great numbers on the 21st of August, when the young were just able to fly. The nests were mere cavities in the coral sand, under low bushes. Their number was so great, and they were so near each other, that great care was required in walking to avoid crushing both young and old birds.

Oct. 7, 1839, Dr. Pickering visited Cora Island, an annular coral reef, inundated at high water, with the exception of two banks, one of which was covered by a grove of trees. Great numbers of birds were flying over and about the grove. The Terns, and especially *Sterna fuliginosa*, came out from under the low branches in vast numbers. There were three species of *Sterna*, one of *Fregata*, and three of *Sula* observed on this island; and nearly all of them were engaged in rearing their young. The Sooty Tern was present in larger numbers than all the others combined, its breeding-place occupying the weather side of the grove, or that most exposed to the sea. Here the trees presented a dense growth of branches, reaching almost to the ground; and beneath these the birds were obliged to force themselves out before they could take to flight The eggs of this species were laid on the ground, under the thicket, without any nest, but with some regularity, and at a distance of about two and a half feet apart. In two instances only, out of at least a thousand nests examined, were there two eggs together. The birds, after having once risen, kept flying around the grove, and their cries might have been heard at a considerable distance. On the discharge of a gun, or a loud shout, there was complete stillness for a few moments, and then the noise recommenced.

The Sooty Tern is mentioned in Dr. Pickering's Journal as occurring at nearly all the points in the Pacific Ocean visited by the United States Exploring Expedition; and is shown to be one of the most extensively diffused of all the aquatic birds, being found both in temperate and tropical regions almost everywhere throughout the world.

Professor Alfred Newton, toward the end of May, 1857, saw several individuals of this species about midway between St. Thomas and Santa Cruz; and Mr. Osbert Salvin, on the 29th of May, 1859, when passing along the south side of Tortole and St. John's, also saw numbers of them. They came close to the ship, and he could make them out quite well. This species is of occasional occurrence in Bermuda. Two instances are mentioned by Major Wedderburn, and one is also furnished by Mr. Hurdis. Its presence there seemed generally to be due to the occurrence of a severe gale, by which it had been driven upon the shore.

This bird occurs at Jamaica, and its eggs constitute an article of considerable commercial importance. The Pedro Keys are the resort of this species, as also of the *Anous stolidus* and of other sea-fowl. This Tern is the "Egg-bird" of Jamaica. On the 9th of May, 1832, Audubon visited a low island among the Tortugas on which large numbers of this species were breeding. On landing it seemed to him for a moment, as he says, as if the birds would raise him from the ground, so thickly were they crowded around him, and so rapid were the motions of their wings; while their cries were deafening. The birds might easily have been caught while they were sitting, or when scrambling through the bushes to escape from the intruders. The sailors, provided with sticks, knocked down the Terns as they flew over them; and in less than half an hour more than a hundred were killed, and several baskets of eggs collected. The latter proved to be delicious eating, in whatever way cooked. During each night, or between 2 and 4 A. M., a large number of these Terns went out to sea to feed, being able to do this by night as well as by day. This species is said rarely to alight on the water, and never to dive headlong in pursuit of fish, as the smaller Terns are wont to do, but passes over its prey in a curved line and picks it up. This Tern may often be seen following in the wake of a porpoise, capturing some of the fish thus brought within reach. Its flight is firm and steady, rather than light and buoyant, and it hovers close to the surface of the water, in the manner of a Gull, to pick up floating objects.

Audubon states that the Sooty Tern always lays three eggs, and that he never found more than this number. When wounded, and seized by the hand, this bird bites severely and utters a plaintive cry; this cry differs from its usual note, which is loud and shrill, resembling the syllables *oo-ee, oo-ee*. The nests were scooped near the stems of the bushes, under the shade of the boughs, and were within a few inches of one another. The egg measured 2.13 inches in length by 1.50 in breadth; it has a pale cream-colored ground, is marked with various tints of light umber, and has lighter marks of purple, which appear as if within the shell. The eggs in the Smithsonian Collection from the Tortugas have the ground-color of a light pinkish cream, and are marked with blotches of a rich reddish chestnut, with cloudings of lavender of two shades. In some specimens the reddish chestnut-color of the markings deepens almost to blackness.

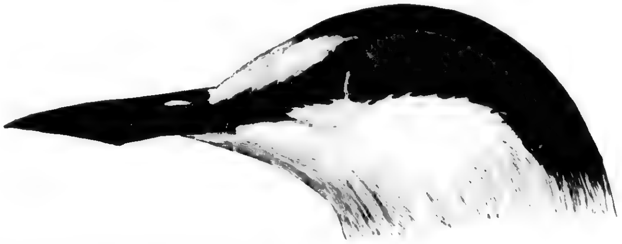
Sterna anosthæta.

THE BRIDLED TERN.

Sterna anosthæta, Scop. Del. Faun. et Flor. Ins. I. 1786, no. 72 (ex Sonn. Voy. 125, pl. 84). — Coues, Check List, 1873, no. 574.
Sterna (Haliplana) anosthæta, Coues, Key, 1872, 322.
Sterna (Haliplana) anæstheta, Coues, Birds N. W. 1874, 701.
Sterna anæstheta, Saunders, P. Z. S. 1876, 664 (fig. of foot on p. 665). — Ridgw. Nom. N. Am. B. 1881, no. 692.
Sterna anæsthetica, Coues, 2d Check List, 1882, no. 805.
Sterna oahuensis, Blox. Voy. "Blonde," 1826, 251.
Sterna panayensis, Gmel. S. N. I. ii. 1788, 607.
Sterna panaya, Lath. Ind. Orn. II. 1790, 808.
Sterna antarctica, "Cuv." Less. Traité, 1831, 621.
Sterna infuscata, Heugl. Ibis, 1859, 351.
Haliplana discolor, Coues, Ibis, 1864, 392. — Elliot, Illustr. Am. B. II. 1869, pl. 57.
? Hydrochelidon somalensis, Heugl. Orn. N.-O. Afr. 1873, p. ccvii.
Sterna melanoptera, Swains. B. N. W. Afr. 1837, 249.

Hab. Nearly the same range as *S. fuliginosa*, but not ranging so far from the tropics. Florida (only North American record).

Sp. Char. *Adult:* Lores, crown, occiput, and upper part of nape deep black; forehead and superciliary region, entire lower parts, and under surface of the wing pure white. Lower part of nape and extreme upper part of the back ashy white; remaining upper parts brownish slate, more plumbeous on the back, where shading gradually into the whitish of the nape; primaries, primary coverts, and alulæ blackish slate. Rump and six middle tail-feathers brownish ashy, like the back, the two outer rectrices on each side white, shading into grayish terminally, most extensively on the second feather, the outer web of the first being wholly white. Bill and feet black; iris dark brown. *Young, first plumage:* Entire lower parts, with cheeks, forehead, and sides of the crown, white, as in the adult; middle of the crown, with occiput and nape, brownish dusky, the first streaked with grayish white. Upper parts grayish brown, the scapulars, interscapulars, and tertials bordered terminally with grayish white.



Total length, 14.00 to 15.00 inches; wing, 10.50; tail, 6.00–7.00; culmen, 1.40-1.60; depth of bill at base, .35–.40; tarsus, .85; middle toe, .85.

There can be very little doubt that this species is an occasional visitant of Florida, both on the Atlantic and on the Gulf coast. There is now in the collection of Mr. George N. Lawrence, of New York, an example labelled as having been taken in Florida; it was formerly in the Audubon collection; and Mr. Charles B. Cory, of Boston, in the summer of 1879 found it abundant in June on Long Island, one of the Bahamas. In the West India Islands, where it is especially numerous, it is "the egg-bird" *par excellence*, and is more or less confounded with the *S. fuliginosa.* Mr. Lawrence, in his paper on the Birds of Sombrero — a rocky islet near St. Martin's — quotes Mr. Julien as believing that the number of individuals of this species which visited that place was at one time equalled only by those of *S. maxima* and *Anous stolidus.* It is said to be remarkable for its social peculiarities — almost always associating with the Noddies; and in however great numbers it may be present on any Key, it is found to be almost always more or less mixed with flocks of that Tern. It arrives at Sombrero in March, and departs in August. Its nest is said to be similar to that of the Noddy, and it lays but one egg. It often flies high, and with a peculiarly quick darting motion, keeping up a noisy chattering very different from the discordant "caw-caw" of *Anous stolidus.* Mr. Julien never observed the two species to quarrel with each other, although individuals of the same species often engaged in long and obstinate combats.

The eggs of this bird found at Sombrero are described by Mr. Lawrence as measuring 1.88 inches in length by 1.25 in breadth, as having a ground-color of a creamy white, and as being marked with blotches of deep rusty brown, most abundant on the larger end. Eggs collected in British Honduras by Mr. Osbert Salvin vary in length from 1.90 inches to 1.85, and in breadth from 1.35 to 1.30. Their ground-color is pale brownish cream, and the markings are small spots of burnt-sienna and lavender-gray.

Mr. Cory found birds of this species breeding in large numbers at Clarence Harbor. They were in company with the Sooty and the Roseate Tern; and eggs procured as late as June 8 were quite fresh. In their breeding habits Mr. Cory found them very similar to the *fuliginosa.* Their eggs were found deposited in sheltered clefts in ledges of rocks, or in cavities among the loose bowlders which lined the sea-shore. The egg in all instances was single, and resembled that of the *fuliginosa*, but was more spotted about the larger end, while the reddish tinge of the ground-color was much fainter. The egg taken by Mr. Cory measures 2.00 inches in length by 1.42 in breadth; the ground-color is a rich cream, strongly washed with a rufous tint; around the larger end is a ring of large and confluent blotches of reddish brown; smaller spots of the same are diffused in a scattered manner over the whole egg, with obscure shell-markings of lilac and slate.

An egg in my collection, taken by Mr. Godeffroy on the coast of New Guinea, measures 2.05 inches by 1.45. The ground-color is pure cream, without a tinge of any other shade. Grouped around the larger end, covering nearly the entire portion, are numerous spots of light brown, and others of much deeper shade, interspersed, and occasionally confluent. Smaller ones are sparingly scattered over the entire surface, and there are also a few shell-markings of a faint purple.

Genus **HYDROCHELIDON**, Boie.

Hydrochelidon, Boie, Isis, 1822, 563 (type, *Sterna nigra*, Linn.).

Char. Similar to the smaller species of *Sterna*, but tail only very slightly forked or emarginate, the rectrices not attenuated at ends, and the webs of the toes filling less than half the interdigital spaces. Adults gray or blackish beneath, as dark as, or darker than, the color of the upper surface.

The three known species of this genus may be defined as follows — *H. leucoparia* being included, partly for comparison, but more especially on account of having been obtained in the West Indies, and therefore entitled to a place in the American fauna: —

A. Smaller (wing 8.50 inches or less); head wholly dusky or black.

1. **H. nigra.** Upper tail-coverts and tail plumbeous, like the back; wings uniform plumbeous.
   - *α.* Lower parts plumbeous, scarcely, if at all, darker than the upper surface. *Hab.* Europe. . . . . *nigra.*[1]
   - *β.* Lower parts black, much darker than the upper parts, which are decidedly darker than in *H. nigra.* *Hab.* America . . . . *surinamensis.*
2. **H. leucoptera.** Upper tail-coverts and tail white, sometimes shaded with pearl-gray; anterior lesser wing-coverts white, lower parts black, as in *H. surinamensis.* *Hab.* Palæarctic Region; accidental in North America (Wisconsin; KUMLIEN).

B. Larger (wing 9.50 inches); a broad white stripe on side of the head, below the eye.

3. **H. leucopareia.**[2] Entire pileum, including lores and nape, uniform black; a wide stripe on the side of the head, from the chin and rictus back to the nape, beneath the eyes, also the crissum and lining of the wing, white; rest of the plumage uniform light bluish plumbeous. *Hab.* Palæarctic Region; accidental in West Indies.

Hydrochelidon nigra surinamensis.

THE BLACK TERN.

Sterna surinamensis, GMEL. S. N. I. 1788, 604.
Hydrochelidon surinamensis, BONAP. Compt. Rend. 1856, 773.
Hydrochelidon lariformis surinamensis, RIDGW. Nom. N. Am. B. 1881, no. 693.
Hydrochelidon nigra surinamensis, STEJN. Proc. U. S. Nat. Mus. Vol. 5, 1882, 40.
Sterna plumbea, WILS. Am. Orn. VII. 1813, 83, pl. 83 (= young).
Hydrochelidon plumbea, LAWR. in Baird's B. N. Am. 1858, 864. — BAIRD, Cat. N. Am. B. 1859, no. 695.
Sterna nigra, SW. & RICH. F. B. A. II. 1831, 415 (nec LINN.). — NUTT. Man. II. 1834, 282. — AUD. Orn. Biog. III. 1835, 593; V. 1839, 642, pl. 180; Synop. 1839, 320; B. Am. VII. 1844, 116, pl. 438.
Hydrochelidon nigra (part), SAUNDERS, P. Z. S. 1878, 642.
Hydrochelidon fissipes (part), COUES, Pr. Philad. Acad. 1862, 554 (nec *Sterna fissipes,* LINN.); Key, 1872, 323; Check List, 1873, no. 575.
Hydrochelidon lariformis (part), COUES, B. N. W. 1874, 704 (nec *Rallus lariformis,* LINN.); 2d Check List, 1882, no. 806.

HAB. The whole of temperate North America, and portions of tropical America; north to Alaska, south to Chili; breeds throughout its range, except toward the extreme south.

SP. CHAR. *Adult, in summer:* Head, neck, and lower parts sooty black, the head and neck, especially above, nearly pure black; anal region and crissum pure white. Entire upper parts

[1] HYDROCHELIDON NIGRA.
Sterna nigra, LINN. S. N. ed. 10, I. 1758, 137; ed. 12, I. 1766, 227.
Hydrochelidon nigra, BOIE, Isis, 1822, 563.
Rallus lariformis, LINN. S. N. ed. 10, I. 1758, 153.
Hydrochelidon lariformis, COUES, B. N. W. 1874, 704 (part).
Sterna nævia, LINN. S. N. I. 1766, 228 (ex BRISS.; = *Rallus lariformis* of ed. 10).

[2] HYDROCHELIDON LEUCOPAREIA.
Sterna leucopareia, NATTERER, in Temm. Man. 1820, 726.
Hydrochelidon leucopareia, GOULD, Handb. to B. Austr. II. 1865, 406.
Sterna javanica, HORSF. Trans. Linn. Soc. XIII. 1820, 198.
Sterna grisea, HORSF. t. c. 199.
Sterna hybrida, PALL. Zoog. Rosso-As. II. 1826, 338.
Hydrochelidon hybrida, GRAY, Gen. B. III. 1846, 660. — SAUNDERS, P. Z. S. 1876, 640.
Sterna Delamottei, VIEILL. Faun. Fr. 1828, 402.
Sterna similis, GRAY & HARDW. Illustr. Ind. Zool. I. 1882, pl. 70, fig. 2.
Hydrochelidon fluviatilis, GOULD, P. Z. S. 1842, 140.
Hydrochelidon Delalandii, BONAP. Compt. Rend. XLII. 1856, 773.
Sterna innotata, BEAVAN, Ibis, 1868, 404 (young).

uniform plumbeous, the border of the wing, from the shoulders to the carpo-metacarpal joint, white. Lining of the wing light plumbeous-gray. Bill deep black, the rictus lake-red, the interior of the mouth pinkish; iris dark brown; legs and feet purplish dusky. *Adult, in winter:* Head, neck, and lower parts pure white; orbital and auricular regions dusky; crown and occiput dark grayish, the feathers bordered with paler. Upper parts as in the summer plumage, but rather paler plumbeous. *Young, first plumage:* Very similar to the winter plumage, but scapulars, interscapulars, and tertials tipped with raw-umber brown, the anterior lesser wing-coverts dusky, the crown, occiput, and upper part of the nape dusky, and the entire sides washed with plumbeous. *Downy young:* Above, deep, soft umber-brown, with a few coarse, irregular marblings of black; forehead, crown, throat, and jugulum more sooty brown, without markings; side of the head (including lores) dull whitish; abdomen white centrally, pale sooty grayish exteriorly.[1]

H. nigra, adult in summer.

Total length, about 9.25 inches; extent, 24.00–25.00; wing, 8.25; tail, 3.75, its fork, .90; culmen, 1.10; depth of bill at base, .25; tarsus, .68; middle toe (with claw), .90.

Summer plumage.

With a series before us of five adult specimens of the European bird in summer plumage, we are much surprised that authors maintain the absolute identity of the American Black Tern with the true *H. nigra.* Not one of these five specimens can be matched among a series of over fifty examples of the American bird in corresponding dress, while three of them are in a plumage never approached by the American form. These three examples are bluish plumbeous beneath, the shade being exactly that of the upper parts, which are very decidedly lighter than in any American examples. All of these three specimens have the feathers of the throat white beneath the surface, while one of them (No. 57088, ♀) has the chin and upper part of the throat uniform grayish white, in abrupt and marked contrast with the sooty black of the lores and orbital region. Only the upper half of the head is blackish, this color forming a well-defined "hood," as in the species of *Sterna*, its lower edge on a line with the rictus, and including the auriculars; the lower eyelid being marked by a whitish crescent. Only one example in the very large series of American specimens approaches the darkest-colored individual from Europe, and even in this instance the difference is very decided. In his paper on the *Sterninæ* (P. Z. S. 1876, p. 643), published subsequently to Dr. Coues's monograph in "Birds of the Northwest," Mr. Howard Saunders remarks as follows concerning the differences between the American and the European birds of this species: —

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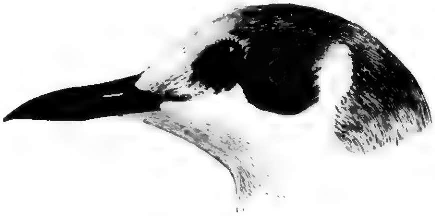
[1] From No. 77564, Cold Springs, Cal., July 27, 1877; H. W. HENSHAW, collector.



Winter plumage.

"In almost all the adult American specimens which I have examined — about a dozen in number — the black of the under parts is of a deeper and more sooty brown tint than in any European examples out of upwards of a hundred from various localities, the black being as dark as in *H. leucoptera* — an intensity of hue which our form never possesses. In two or three examples, however, all females, the lightest colored American birds approach more closely to very dark specimens from Europe; and in the young and winter plumage the two forms are absolutely undistinguishable; so that any specific separation is out of the question."

The geographical difference in coloration as exhibited in the series before us, which in proportionate numbers of the two forms is just the reverse of that examined by Mr. Saunders, is so very marked that it is only in view of the possible intergradation through the lighter American and the darker European examples that we consider them as specifically identical. The extreme and average measurements of five adults of the European form are as follows: Wing, 8.40–8.75 inches (average, 8.56); tail, 3.50–3.70 (3.60); culmen, 1.05–1.10 (1.09); depth of bill through base, .20–.25 (.22); tarsus, .60–.68 (.62); middle toe, .55–.65 (.58).

The Black Tern is a cosmopolitan species, common to both continents. It is distributed, at different seasons, in nearly all parts of North America; regularly and abundantly in some regions, occasionally and in small numbers in others. It is found throughout Central America and Mexico, and in South America as far south at least as Chili, and north to the Fur Regions and Hudson's Bay. Examples of this bird were taken near Fort Resolution, Fort Yukon, and Moose Fort, and it is abundant in the Red River and Selkirk settlements.

In Great Britain this bird is only a summer visitor, differing from all the other Terns in some of its habits, seldom associating with any other species, and being rarely seen on the sea-coast, and then only in the spring, at the time of its arrival, or in the fall, when about to leave for the winter. Preferring fresh-water marshes, the vicinity of rivers, and reedy pools, it is found in the summer only in the interior. It is rare in the north of England, and makes its appearance in the southern part by the end of April or the beginning of May, and leaves early in October, being very rarely seen as late as November.

This is said to be a common bird in Sweden; it is also abundant in Holland and in Germany, as well as in the extensive marshes of Hungary. It visits several districts in France and Switzerland. In its migrations it passes through Italy, Corfu, Crete, Sicily, Asia Minor, and is found in the regions of the Caucasus. It is to be met with during the winter in Madeira and on the African coast of the Mediterranean. Kalm — as quoted by Pennant — saw flocks of hundreds of this species in the Atlantic Ocean, midway between England and America.

Mr. C. A. Wright, in a paper on the birds of Malta, states in reference to this species that in July, 1870, a large number of these Terns visited the harbors of Malta, and remained until September; but none of them were in their summer plumage. It was exceedingly interesting to watch their light and rapid movements, as they dropped suddenly from a great height, splashing the water like a falling stone, or coursed through the air, as if imitating the Swallow. One of these Terns, perched on a floating cork, allowed the boat to drift down toward it, and did not move until almost near enough to be touched with the hand. Occasionally one would exchange calls with a passing companion; the note was a shrill scream.

Mr. Salvin, late in April, met with a large flock of this species on the coast of Honduras, and obtained several examples. Mr. Grayson found it at Mazatlan, where it makes its appearance in September and October, and where it remains through the winter months. Mr. Dresser mentions it as being common at the mouth of the Rio Grande during the summer; but he noticed none at Galveston. At the lagoons near Matamoras he often saw twenty or thirty of these birds at one time.

Mr. N. B. Moore writes from Sarasota Bay, Fla., that he was surprised to see, on the last day of June, 1873, two groups of this species, of five each, in a strong gale from the southwest, scudding toward the south. They were in their young plumage, and passed quite near him. After this none were seen until August 6. He inferred that some breed in that neighborhood.

This species is present on the coast of the Carolinas, for a few days only, after the second week in May, reappearing in August.

Captain Blakiston obtained a specimen of this bird on the Saskatchewan; Mr. Bernard Ross met with it on the Mackenzie, and Mr. Murray procured it on Hudson's Bay. Richardson states that it is common in the interior of the Fur Countries, on the borders of lakes. It breeds chiefly in the swamps, and is said to feed principally upon winged insects.

Giraud mentions the fact that the young of this species were found by Mr. Brasher in the extensive meadows between the Passaic and the Hackensack rivers, in August, 1843, but neither its nest nor its eggs have ever been detected; yet Giraud was confident that a few of these birds breed along the rush-covered margins of the streams and ponds of Long Island. This Tern, he adds, is very strong and muscular, and possesses great power of wing. It is very active in pursuit of its prey, but displays the timidity of disposition peculiar to its race, except when defending its young.

This bird is of occasional occurrence in Massachusetts after the breeding season. Mr. George O. Welch has procured specimens in the marshes near the sea, in Lynn, late in the fall; and Mr. Maynard has obtained specimens at Ipswich. Mr. William Brewster informs me that one was procured in his presence at Rye Beach, N. H.; and it has also been taken at Nantucket.

Dr. Cooper states that this Tern migrates through the interior valleys of California, and that some probably breed about the marshes within the State, especially in the mountains, as he met with it on the head-waters of the Mohave River as late as the 7th of June. It is also common along clear water throughout the Rocky Mountains, especially in the cooler months, where it fishes pretty much in the same manner as the larger Terns, also feeding on insects, in pursuit of which it flies in the manner of Swallows. It is rarely seen on the Pacific sea-coast, and only in spring and fall.

Mr. B. F. Goss found this Tern breeding in large numbers in the marshes bordering small inland lakes and ponds in Minnesota. The late Mr. R. Kennicott mentioned its breeding in the Calumet marshes, on the southeastern margin of Lake Michigan; and it also breeds in large numbers in the marshes adjacent to Lake Koskonong, in Southern Wisconsin, where its eggs have been taken, at different times, in considerable numbers.

Its nest is usually placed near water — sometimes over shallows — on tufts of reeds or rushes. More commonly than otherwise it builds in very wet localities, and not infrequently the nest is but little raised above the level of the water. It is made of coarse flags, reeds, and grasses, and lined with slender bits of the same materials. The eggs — usually three — are occasionally four in number, average 1.42 inches in length by 1.00 inch in breadth, and have a ground-color of a dark olive-brown, blotched and spotted with bistre so deep as to have the effect of blackness. The markings are in most cases quite bold, and are principally at the larger end.

This Tern is quite celebrated for the ease and certainty with which it pursues and captures, on the wing, the larger insects, such as dragon-flies and beetles. Its flight is rapid, and it can stop, turn, and alter its course with all the ease of a Swallow.

It is said to arrive in Louisiana, coming across the water from the Mexican territories, about the middle of April, and to continue passing through until into May. It reappears, in the course of its southern migrations, in the months of September and October. Many pairs breed in the intermediate range between the Southern States and the Great Lakes. Audubon found it breeding on the margins of ponds near the Ohio River in Kentucky, and also in the neighborhood of Vincennes, Ind.

Professor Kumlien informs me that the Black Tern is very abundant not only near Lake Koskonong, but also wherever there are suitable situations, such as muddy marshes, with water here and there with a depth of from a few inches to three or four feet. In the large marshes, at some distance from the lake, or in a shallow bay, it makes its nest of broken pieces of reeds, the nest being one large mass of reeds, more or less rotten, heaped together, the whole raised from one to four inches above the water. But the nests appear to vary very considerably, there being sometimes hardly anything more than a simple depression, and at other times quite an elaborate structure. The chick (beautifully mottled with different shades of brown) swims and dives when but a few hours old. By far the greater number of the Black Terns seen in the lake during the early part of summer have their nests in the adjoining marshes, and only visit the lake for foraging purposes. This bird arrives in May, and departs so gradually that it is impossible to say anything more definite about the time of its leaving than that by September these Terns have gone. Among the immense numbers of Black Terns seen there in June comparatively few are immature birds.

Captain Bendire found this a common summer resident in Eastern Oregon, breeding in colonies in several of the sloughs in the vicinity of Silver River. He obtained a large number of their eggs, nearly fresh, June 1, 1876.

Eggs of this species in the Smithsonian Collection, from California and from Pewaukee, Wis., have a ground-color varying from a deep drab, or a brownish olive, to a light drab, and also to a light greenish drab. The spots are numerous, evenly distributed, and are of a dull lavender-gray, brownish black, and umber-brown, intensified to blackness. Specimens in my own collection, from Lake Koskonong, have the following average measurements: 1.21 by .96 inches; 1.42 by 1.00; 1.37 by 1.00; 1.36 by .90.

Hydrochelidon leucoptera.

THE WHITE-WINGED BLACK TERN.

Sterna leucoptera, MEISNER & SCHINZ, Vög. Schweiz, 1815, 264.

Hydrochelidon leucoptera, BOIE, Isis, 1822, 563. — SAUNDERS, P. Z. S. 1876, 641. — RIDGW. Nom. N. Am. B. 1881, no. 694. — COUES, 2d Check List, 1882, no. 807.

Hydrochelidon nigra, GRAY, Gen. B. III. 1849, 660 (not *Sterna nigra*, LINN.). — COUES, B. N. W. 1874, 709.

Hydrochelidon subleucoptera, BREHM, Vogelfang, 1855, 350.

HAB. Palæarctic Region, Africa, Australia, and New Zealand. Casual or accidental in Eastern North America (Wisconsin; KUMLIEN).

SP. CHAR. *Adult, in summer:* Head, neck, and lower parts, except anal region and crissum, uniform sooty black, deeper black on the head and neck; back, scapulars, tertials, and upper part of rump plumbeous; wings silvery gray, becoming gradually white on the anterior lesser coverts. Lower part of rump, and upper tail-coverts, white, sometimes tinged with bluish gray; tail grayish white or pale grayish, the feathers tinged with deeper grayish toward ends. Anal region and lower tail-coverts pure white. Lining of the wing, and axillars, dark plumbeous. Bill dark brownish; iris dark brown; legs and feet pale brownish, in the dried skin.

Wing, 7.60–8.20 inches (average, 7.99); tail, 2.80–3.25 (3.06); culmen, .90–.95 (.94); depth of bill through base, .20; tarsus, .70–.75 (.71); middle toe, .60–.65 (.61). [Four specimens.]

The single American specimen examined (the only one known — No. 66213, ♀ ad., Lake Koskonong, Wis.; TH. KUMLIEN), has the wing and tail much shorter than either of the three European specimens, measuring, respectively, only 7.60 and 2.80 inches against 8.00 and 3.00 — the minimum of the same measurements in the European examples.

The occurrence of a single specimen of this well-known European species within the limits of the United States is an interesting incident of comparatively recent occurrence. It was taken by Ludwig Kumlien, the son of the well-known ornithologist, Professor Thure Kumlien, on Black-hawk Island, Koskonong Lake, July 5, 1873. It was a female, apparently breeding, and flying in company with a flock of the common Black Tern. The eggs in its ovaries were as large as No. 6 shot.

In Europe this species is a common companion of *H. nigra*, and rather a southern species than a northern one. It is of only occasional occurrence in Great Britain, and is merely accidental in Sweden, in both of which countries the Black Tern is comparatively common. Mr. Wheelwright states that only a single example of this species has been seen in South Sweden. A solitary specimen was shot on the Shannon River in 1841; this was supposed to be a form of the Black Tern, and was for a while so labelled in the museum of the Dublin Natural History Society. Another specimen was shot near Yarmouth, England, May 17, 1853. According to Temminck, this Tern inhabits the bays and inlets of the shores of the Mediterranean, and is very common about Gibraltar. It visits also the lakes, rivers, and marshes of the countries in the vicinity of the Alps. It is said to be very common about the lakes of Lucamo, Lugano, Como, Iseo, and Garda, and is occasionally seen on the Lake of Geneva. It is included by Dr. Schinz among the birds of Switzerland, and has also been procured in France and Belgium. Brehm includes it in his work on the Birds of Germany, and Nilsson in his Fauna of Scandinavia, as a very rare straggler; and Savi and Malherbe give it as a bird of Italy. Mr. Drummond met with it in Northern Africa, near Tunis. It is said to be common in spring in Dalmatia. Its habits do not appear to differ essentially from those of its near relative, *H. nigra*.

Its occurrence in the Transvaal, in Africa, renders it probable that this species may be more or less generally distributed over the whole of that continent. Mr. T.

Ayres mentions seeing several of these birds hawking for insects over a swamp some eight miles from Potchefstroom. He speaks of their flight as being slow, uncertain, and wavy. Their stomachs were found to contain insects.

GENUS **ANOUS**, LEACH.

Anous, LEACH, Stephens' Gen. Zool. XIII. 1826, 139 (type, *Sterna stolida*, LINN.).

CHAR. Size rather small; tail graduated or wedge-shaped; webs of the toes completely filling the interdigital spaces, and not at all scalloped out anteriorly. Color uniform dusky, becoming hoary on the forehead.

A. stolidus.

The genus *Anous* embraces but one North American species — the *A. stolidus*, LINN. In other portions of the world, more especially in the several regions of the South Pacific Ocean, several other more or less nearly related species occur, only one of which (*A. melanogenys*) reaches the American coast. Their characters are as follows: —

A. Lores dusky, in abrupt and marked contrast with the hoary of the forehead.
  a. *Forehead only distinctly whitish.*
    1. **A. stolidus.** Plumage sooty brown, gradually lightening into hoary gray on the nape and pileum.
  b. *Entire pileum distinctly whitish.*
    2. **A. melanogenys.**[1] White of the pileum changing gradually into ashy on the nape; plumage of the body sooty brown.
    3. **A. leucocapillus.**[2] White of the pileum abruptly defined posteriorly against the sooty brown of the nape; plumage of the body sooty black

B. Lores hoary whitish, like the forehead.
    4. **A. tenuirostris.**[3] Hoary ash of occiput and nape changing gradually into sooty brown on the chin and throat, the cheeks also being grayish brown.

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[1] ANOUS MELANOGENYS, Gray.
Anous melanogenys, GRAY, Gen. B. III 1849, 661, pl. 182; Handl. III. 1871, 123. — SAUNDERS, P. Z. S. 1876, 670, pl. 61, fig. 2.
Anous tenuirostris, SCL. & SALV. P. Z. S. 1871, 566. — COUES, B. N. W. 1874, 710, footnote.
Hab. Intertropical seas and coasts, from Australia, Africa, and throughout Polynesia, to Central America, breeding in immense numbers along the coast of Honduras, and undoubtedly to be detected along the Gulf Coast of the United States.

[2] ANOUS LEUCOCAPILLUS, Gould.
Anous leucocapillus, GOULD, P. Z. S. 1845, 103; Birds Austr. pt. vii. 1848, pl. 35. — SAUNDERS, P. Z. S. 1876, 670, pl. lxi. fig. 3.
Hab. Raines Islet, Australia; Bristow Island, south coast New Guinea; Paumotu Islands.

[3] ANOUS TENUIROSTRIS, Temm.
Sterna tenuirostris, TEMM. Pl. Col. 202 (1838).
Anous tenuirostris, SAUNDERS, P. Z. S. 1876, 670, pl. lxi. fig. 1.
Anous melanops, GOULD, P. Z. S. 1845, 103; B. Austr. pt. vii. 1848, pl. 34.
Hab. Senegal; Rodriguez and Mauritius; Houtmann's Abrolhos, west coast Australia.

Anous stolidus.

THE NODDY TERN.

Sterna stolida, LINN. S. N. ed. 10, I. 1758, 137 ; ed. 12, I. 1766, 227. — NUTT. Man. II. 1834, 285. — AUD. Orn. Biog. III. 1835, 516 ; V. 1839, 642, pl. 275 ; Synop. 1839, 322 ; B. Am. VII. 1844, 153, pl. 440.

Anous stolidus, GRAY, List Gen. B. III. 1841, 100. — LAWR. in Baird's B. N. Am. 1858, 865. — BAIRD, Cat. N. Am. B. 1859, no. 696. — COUES, Key, 1872, 323; Check List, 1873, no. 576 ; 2d ed. 1882, no. 808 ; Birds N. W. 1874, 710. — SAUNDERS, P. Z. S. 1876, 669. — RIDGW. Nom. N. Am. B. 1881, no. 695.

Sterna fuscata, LINN. S. N. I. 1766, 228.

Sterna pileata, SCOPOLI, Del. Faun. et Flor. Ins. I. 1786, 92, no. 73 (ex Sonn. Voy. 125, pl. 85).

Anous niger, STEPHENS, Gen. Zool. XIII. 1826, 140, pl. 17.

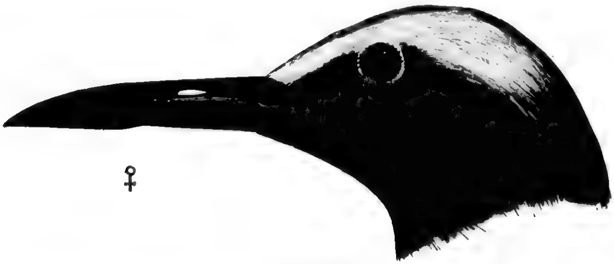
Anous spadicea, STEPHENS, in Shaw's Gen. Zool. XIII. 1826, 143 (young).

Sterna unicolor, NORDM. in Erm. Verz. v. Thier. & Pfl. 1835, 17.

Anous Rousseauii, HARTL. Beitr. Orn. Madagasc. 1860, 86.

Anous frater, COUES, Pr. Phil. Acad. 1862, 558 (Pacific Ocean).

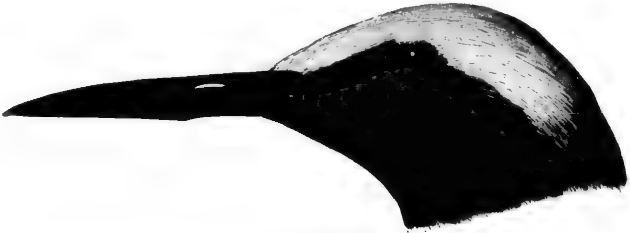
Anous stolidus, var. *frater*, COUES, B. N. W. 1874, 712 (in text).



A. stolidus.

HAB. Intertropical regions in general. In America, north to the Gulf and South Atlantic States, south to Brazil and Chili ; both coasts of Central America.

SP. CHAR. *Adult:* Prevailing color uniform sooty brown, becoming gradually grayer on the neck and head, laterally and underneath, but lightening on the nape and pileum into pale ashy, which grows gradually lighter anteriorly, the forehead being quite white ; lores dark sooty plumbeous, in abrupt and marked contrast with the white or pale ashy of the forehead. Remiges, primary-coverts, and tail dusky brown, the primaries nearly black. Bill deep black ; iris brown ; "feet dull brownish red, the webs dusky, the claws black" (AUDUBON). *Young?* (No. 67323,



A. melanogenys.

Palmyra Island; T. H. STREETS): Similar, but head uniform grayish brown, the frontlet hoary grayish.

Total length, about 16.00 inches; extent, 31.00; wing, 10.00–10.50; tail, 6.00; culmen, 1.75; depth of bill at base, .38; tarsus, 1.00; middle toe, with claw, 1.45.

There is considerable variation among different specimens in regard to the color of the pileum, which is frequently grayish, the extreme anterior part of the forehead only white. In some examples the head and neck are decidedly plumbeous.

The common Noddy Tern appears to be an intertropical species, and to be found round the entire surface of the globe, both north and south of the equator, at a distance from it of rarely exceeding thirty degrees north or south. While the specimens from the shores and islands of the Pacific Ocean differ, with considerable uniformity, in certain respects from those obtained on the Atlantic coast, these differences are small and unimportant, and apparently not sufficient to warrant us in separating specifically the birds of the Atlantic from those of the Pacific. This being the case, it is evident that this bird has a very extended range.

It is mentioned by the naturalists connected with the Wilkes Expedition as having been observed at widely distant points in the Pacific Ocean. One specimen having been attracted by the ship's light at night, was obtained by Mr. Peale on the equator, in longitude 17° 44′, in the Atlantic Ocean. It was not distinguishable from others obtained at the Dangerous Archipelago or New Zealand. Unlike the Sooty Tern, the presence of this bird does not indicate the vicinity of land. On the islands of the Pacific Mr. Peale found it building its nests of sticks, on trees; the eggs being brownish white, spotted with reddish brown, 2.20 inches long and 1.50 inches in breadth.

Dr. Pickering mentions this species as of common occurrence at Gardner's Island, August 19. Its nest was built in the fork of a tree, with much more care than is usual in this family. The egg or young was single in all instances noticed. Subsequently at sea, September 4, he states that one of this species alighted on the taffrail, and was taken by hand. It had very limited power of perching, and preferred walking. At first it seemed awkward and confused, but in an hour became accustomed to confinement, and very carefully adjusted its feathers. It was set at liberty in the afternoon, but would not leave the ship for some time. The occurrence of this bird at nearly all the points visited by the Expedition in the Southern Pacific Ocean is mentioned by Dr. Pickering.

Mr. J. C. Melliss ("Ibis," 1870) speaks of this species as being a common bird on the Island of St. Helena. It is described as a less shy and retiring species than the other sea-birds, frequenting the roadstead, where, in the neighborhood of ships riding at anchor, it may be seen sitting on the surface of the water, or in close proximity to a boat. It inhabits principally the cliffs of the islets — as, for instance, Egg Island — where it breeds in swarms. It does not associate there with any other birds, but is one of the most abundant species.

Mr. Stoltenhoff states that he found this bird breeding on Inaccessible Island, one of the Tristan d'Acunha group, where it is called the "Wood Pigeon." It arrives about the middle of September, and nests about the middle of November, building a nest of sticks, leaves, etc., in the branches of trees. One egg only is laid, and this is hatched in January. It builds all over the island, which it leaves the third week in April.

It also breeds on Ascension Island — where it is not numerous — in company with a few Gannets, on small rocky islets off the northwest corner of the main island.

This species is also included by Mr. G. R. Gray in his List of the Birds of New Zealand and of the Adjacent Islands. Mr. Edward Newton found it breeding on the

Island of Rodriguez, near Mauritius. Mr. R. Swinhoe states that in the harbor of Sawo, on the northeast side of Formosa, a few of these Terns were found breeding on the cliffs. One individual flew into his boat, and was knocked down by a sailor. Another was brought to him alive. In the voyage round the island he frequently noticed these birds crossing and recrossing his wake, as if searching for food in the troubled waters stirred up by the steamer's paddles. They always kept a long distance in the rear, and made no attempt to come on board.

This Tern was observed on the Pacific coast of Guatemala by Mr. Salvin. In May, 1859, he also met with it near the Island of St. John's; and presumes that it probably occurs about St. Croix. On the coast of Honduras he visited its breeding-place, where it was nesting, in company with the *A. melanogenys*. Its nest was a large loose structure made of sticks heaped together at the top of a cocoanut-tree, or on the outer branches of a mangrove. The bird was as tame as possible, and was not at all disturbed when Mr. Salvin climbed the tree on which it was nesting. The eggs had all been hatched.

Mr. Grayson found it breeding on Isabella Island, on the north end of which, as he states, these birds were present in large communities, their nests being built upon shelving rocks beneath the overhanging cliffs, like those of the Mud-Swallow. In one particular locality there were a great many of these birds, and when they were fired at they came down in swarm over the canoe, circling around like Swallows. The nests were all placed close together, and were inaccessible.

A single individual of this species is stated by Major Wedderburn to have been taken in Bermuda, September, 1854.

Audubon found the Noddies on one of the Tortugas, called Noddy Key. There they formed regular nests of twigs and dry grass, which they placed on low trees or bushes, but in no instance on the ground. On the 11th of May, 1832, he found many repairing and augmenting old nests, while others were constructing new ones. Some were already sitting on their eggs. Some of the nests were two feet in height; yet in all there was only a slight depression on the top.

Audubon — disagreeing with most observers — states that the Noddy lays three eggs; while others say that it never has more than one. He describes the eggs as of a reddish-yellow color, spotted and patched with dull red and faint purple, and gives their measurement as 2.00 inches in length and 1.37 in breadth — which is considerably less than the average. They are said to be excellent eating. This bird was observed to go far out to sea to collect its food, which consisted of fish caught on the floating seaweed by skimming close over the surface, in the manner of Gulls. When seized by the hand it is said to utter a rough cawing cry, not unlike that of a young Crow.

Mr. Richard Hill, of Jamaica, quoted by Mr. Gosse, speaks of its breeding on the Pedro Keys. The only vegetation is a low stunted kind of tree known as saffron-wood — the "tea-shrub" of the Bahama Islands. Among their branches, at a very small elevation from the ground, the Noddies build nests which grow larger by accumulations of materials; these nests being repaired and used again in successive seasons. They are exceedingly shallow, with scarcely any hollowing at all, and are generally embellished with an addition of broken sea-shells — such being selected as are spotted and speckled, like the eggs. The object of this curious feature in their construction is not at all understood.

The eggs of this species have a white ground, with a well-marked creamy tinge, and some have a distinctly cream-color, almost buffy. The spots are few and small, and are chiefly about the larger end. In a few instances they are larger. The color is usually a dark chestnut, with subdued shell-markings of lavender gray.

FAMILY STERCORARIIDÆ. — THE SKUAS AND JAEGERS.

CHAR. Covering of the maxilla not entire, as in the *Laridæ*, the basal half being furnished with a horny cere, the lower edge of which overhangs the nostrils; toes fully webbed; claws strongly curved; tail more or less graduated, the central pair of rectrices projecting a greater or less distance beyond the rest.

The Family *Stercorariidæ* is separable from the *Laridæ* chiefly on account of the peculiar bill, which shows a not distant approach in character to that of some forms of the *Raptores*. The species are all predatory in their nature, the smaller kinds pirating upon the Gulls and other sea-fowl, the larger ones beating along the shores, or even over the land, and preying upon various birds, much in the manner of the *Falconidæ*. Indeed it is said that at Kerguelen Island the *Megalestris antarcticus* is seldom seen near the water, but keeps strictly to the land, where it is very destructive to Ducks and other water-fowl.

The two North American genera may be thus defined: —

Megalestris. Size large (about equal to *Larus argentatus*), form robust and powerful; depth of the bill through the base equal to one half or more of the length of the mandible measured along the side; tarsus shorter than the middle toe and claw; tail short, the middle rectrices scarcely projecting beyond the rest.

Stercorarius. Size medium (about that of the medium-sized Gulls, *Larus delawarensis* and *canus*), form more graceful and slender; depth of bill through the base less than one half the length of the mandible, measured as above; tarsus decidedly longer than the middle toe and claw; middle rectrices (in full adult birds) projecting far beyond the rest.

GENUS **MEGALESTRIS**, BONAPARTE.

Catharacta, BRÜNN. Orn. Bor. 1764, 32 (type, *C. skua*, BRÜNN.); nec *Catharactes*, BRISS. 1760.
Megalestris, BONAP. Cat. Parzudaki, 1856, 11 (type, *Larus catarractes*, LINN. = *Catharacta skua*, BRÜNN.).
Buphagus, "MOEHR.," COUES, Pr. Phil. Acad. 1863, 124 (same type).

The characters of this genus have been sufficiently indicated above. Only three species (perhaps more properly geographical races) are known, but one of which (*M. skua*) belongs to the North American fauna; the other two belonging, one to Chili, the other to the Antarctic seas.

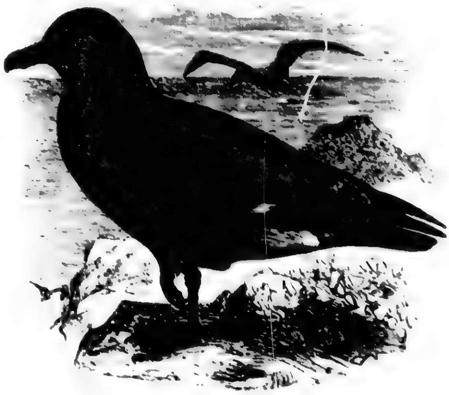
Megalestris skua.

THE SKUA GULL.

Catharacta skua, BRÜNN. Orn. Bor. 1764, 33.
Buphagus skua, COUES, Pr. Acad. Nat. Sci. Philad. 1863, 125; B. N. W. 1874, 604.
Stercorarius (*Buphagus*) *skua*, COUES, Key, 1872, 309.
Stercorarius skua, COUES, Check List, 1873, no. 539; ed. 2, 1882, no. 764.
Megalestris skua, RIDGW. Nom. N. Am. B. 1881, no. 696.
Larus catarractes, LINN. S. N. I. 1766, 226.
Lestris catarractes, ILLIG. Prodr. 1811, 272. — NUTT. Man. II. 1834, 312.
Stercorarius catarractes, BONAP. Consp. II. 1856, 206. — LAWR. in Baird's B. N. Am. 1858, 838. — BAIRD, Cat. N. Am. B. 1859, no. 652. — ELLIOT, Illustr. B. Am. II. pl. 56. — SAUNDERS, P. Z. S. 1856, 319.
Catarracta fusca, LEACH, Syst. Cat. 1816, 40.

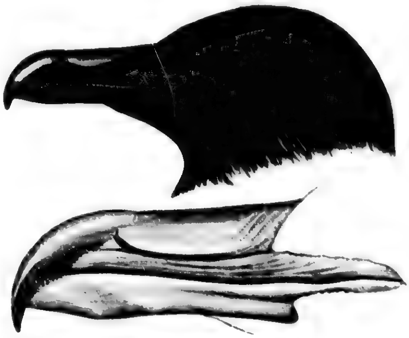
Hab. Coasts and islands of the North Atlantic, chiefly northward. In America, south to coast of New England (Massachusetts; spec. in U. S. Nat. Mus.).

Sp. Char. *Adult:* Prevailing color dull brownish, the interscapulars, scapulars, and wing-coverts striped centrally with pale cinnamon; feathers of the head and neck marked with narrow mesial streaks of the same; lower parts mixed reddish cinnamon and grayish brown, in ill-defined stripes laterally, but nearly uniform on the breast and abdomen. Remiges, primary coverts, and alulæ brownish dusky, the former white basally; this white concealed on the secondaries, but forming an extensive exposed patch on the primaries. Tail uniform dusky brown. Bill dusky; iris brown; legs and feet black. *Young:* Head, neck, and lower parts uniform grayish brown, the lower surface tinged with cinnamon; upper parts darker grayish brown, lightest on the back and lesser wing-coverts, where very indistinctly spotted with rusty cinnamon. Bill and feet brownish.



M. skua.

Wing, 15.75–16.15 inches (average, 15.95); culmen, 2.05; depth of bill through base, .80; tarsus, 2.40–2.70 (2.55); middle toe, 2.15–2.45 (2.32). (Three specimens.)



Megalestris skua.

Having six specimens before us for comparison, we find the Antarctic representative[1] of this species to be easily distinguishable, the colors being appreciably different in all, and the measurements all much greater. The series in question gives the following as the results of careful measurements: Wing, 16.05–16.90 inches (average, 16.28); culmen, 2.20–2.85 (2.37); depth of bill through base, .95–1.00 (.98);

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[1] **Megalestris skua antarctica.** — Antarctic Skua.

Lestris antarcticus, Less. Traité, 1831, 606.
Stercorarius antarcticus, Bonap. Consp. II. 1856, 207.
Buphagus antarcticus, Coues, Pr. Ac. Nat. Sci. Philad. 1863, 127.
Buphagus skua, b. *antarcticus*, Coues, B. N. W. 1874, 605.

Hab. Antarctic seas.

tarsus, 2.70–3.20 (2.96); middle toe, 2.55–2.80 (2.67). The differences pointed out by Mr. Saunders, in his paper on the "Stercorariinæ" (P. Z. S. 1876, pp. 321, 322), are perfectly constant in the series we have examined.

This is another species that has had, until quite recently, very doubtful claims to a place in the fauna of North America; since the only ground for such a claim was its occurrence at Greenland, upon the coast of which it is said by Professor Reinhardt to be an occasional visitant. Mr. Bernard Ross, however, believes that he met with it on the Mackenzie River.

On the coast of California, as Dr. Cooper informs me, it certainly occurs very rarely — if at all — as he has never seen it, nor met with it in local collections; nor does he know of its having been identified on that coast by any one.

Mr. Kumlien procured a single specimen of this species at sea, lat. 41° N., 66° W.; and others were seen at the time. It is of frequent occurrence on the George's and other banks in the winter. He met with it near Lady Franklin Island, north of Hudson Strait, in September. The birds then were with their young on the rocks.

A single specimen was procured off the coast of Massachusetts in the summer of 1878. It was taken alive by Captain Daniel Carroll, of Gloucester, on George's Bank, early in July, with the aid of a fish-hook, and was kept by him on his fishing-schooner a number of days. As it refused food it was thrown overboard; but fortunately was found and preserved by Professor Baird, and is now in the National Museum at Washington. It is mentioned by Mr. G. R. Gray as having a habitat at Campbell Island, Norfolk Island, and Macaulay Island.

Mr. C. A. Wright ("Ibis," 1864) records the capture of a single specimen of this species on the 9th of June, 1860, at Salini, on the north coast of Malta.

Mr. A. G. More ("Ibis," 1865) states that the Great Skua only breeds, within the limits of Great Britain, in the Shetland Islands, where its nesting has long been known. There the birds extend to the Island of Uist, a little beyond lat. 61° N. It is said by Mr. Wheelwright to be rare in the south of Scandinavia — never being seen in the Baltic or in the Sound — but more common on the west coast of Norway.[1]

This bird is said to be common off the coast of Spain in the winter, outside of the Straits of Gibraltar.

Professor Alfred Newton speaks of it as abundant off the coast of Iceland, and occasionally breeding some distance inland. According to Faber it is resident there all the year; he names four places in the southern part of that island where he has known it to breed. Dr. Krüper saw it in the north of Iceland in the summer time, so that it probably breeds there also. It is known to inhabit the Faröe Islands.

In the Island of Uist it is strictly preserved by the proprietors, the belief being general that this bird will defend the flocks from the attacks of the Golden Eagle. It is known to attack and drive off an Eagle if the latter approaches the nest of the Skua, Mr. Dunn having been eyewitness to an occurrence of this kind at Rona's Hill. It is also a great favorite with the fishermen, who consider its accompanying their boats to the fishing-grounds as being a favorable omen, and in return give it the refuse of the fish they catch. This bird does not associate in flocks, and two or more pairs are rarely seen together.

In the autumn and winter this Skua visits the coasts of Ireland, England, France, Holland, and Germany. It is noted for its courage and daring, and for the predatory attacks with which it harasses the Gulls, and compels them to disgorge the fish which they have swallowed. As soon as the fish has been disgorged, the Skua swoops down upon it with so rapid a movement and so sure an aim as frequently to seize the prize before it reaches the water. This bird is on this account known to some as the "Parasitic Gull." It is supposed to be a bird of great longevity. Yarrell states that a specimen brought alive to Dr. Neill in the summer of 1820 — then a nestling — was alive at the Cannon-mills in October, 1843. Its plumage in its twenty-fourth year had become very pale, and its head was grayish white. Another bird was kept alive by Mr. G. T. Fox for ten years, undergoing no change of color at any of its moultings.

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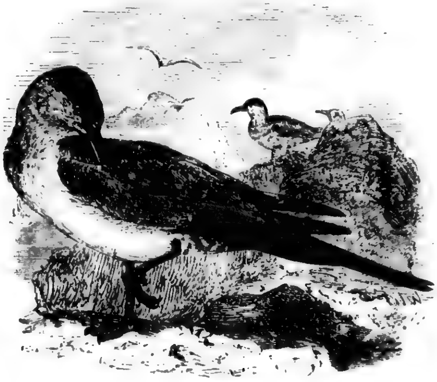
[1] According to later authorities, this species is of rare and rather sporadic occurrence along the Norwegian coast.

This bird lays two or three eggs, olive-brown in color, blotched with darker brown, 2.75 inches in length and 2.00 in breadth. An egg in the Smithsonian Collection, from Greenland (No. 2658), measures 2.90 by 1.95 inches, has a ground-color of a dark grayish drab, with irregular spots of raw-umber and sepia. Another specimen, measuring 2.55 by 1.95 inches, has markings much deeper in color and more distinct.

GENUS **STERCORARIUS**, BRISSON.

Stercorarius, BRISS. Orn. V. 1760, 149 (type, *Larus parasiticus*, LINN.).
Lestris, ILLIG. Prod. 1811, 272 (same type).

The difference between this genus and *Megalestris* consists chiefly in the smaller size and more slender, graceful form of *Stercorarius*, the increased slenderness extending to all parts of the organization. One of the three known species differs considerably in form from the other two, which are so much alike that they are sometimes with difficulty distinguished from each other.



S. parasiticus.

Synopsis of Species.

A. Middle rectrices broad and rounded at ends.

1. **S. pomarinus.** Wing, about 13.50–14.00 inches; middle tail-feathers, 8.00–9.00; culmen, 1.45–1.55; tarsus, 2.10; middle toe (without claw), 1.60–1.75.

B. Middle rectrices attenuated and pointed at ends.

2. **S. parasiticus.** Wing, 11.80–13 15 inches (average, 12.67); central rectrices, 7.70–10.25 (8.66); culmen, 1.15–1.40 (1.27); tarsus, 1.50–1.85 (1.70); middle toe, 1.20–1.45 (1.34). Tarsi black in adult; nasal shield longer than the distance from the anterior edge of the nostril to the tip of the bill.

3. **S. longicaudus.** Wing, 11.55–12.85 inches (average, 12.25); central rectrices, 10.50–14.50 (12.89); culmen, 1.10–1.30 (1.19); tarsus, 1.50–1.80 (1.66); middle toe, 1.08–1.30 (1.20). Tarsi light bluish in adult; nasal shield not longer than the distance from anterior end of nostril to tip of bill.

Stercorarius pomarinus.

THE POMARINE JAEGER.

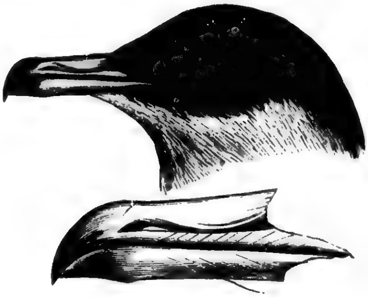
Larus pomarinus, TEMM. Man. Orn. 1815, 514. — SW. & RICH. F. B. A. II. 1831, 429. — NUTT. Man. II. 1834, 315. — AUD. Orn. Biog. III. 1835, 396; Synop. 1839, 332; B. Am. VII. 1844, 186, pl. 451.

Stercorarius pomarinus, VIEILL. Nouv. Dict. XXXII. 1819, 158. — LAWR. in Baird's B. N. Am. 1858, 838. — BAIRD, Cat. N. Am. B. 1859, no. 653.

Stercorarius pomatorhinus, NEWTON, Ibis, 1865, 509. — COUES, Key, 1872, 309; Check List, 1873, no. 540; ed. 2, 1882, no. 765; B. N. W. 1874, 607. — RIDGW. Nom. N. Am. B. 1881, no. 697.

HAB. Northern portion of northern hemisphere, on the seas and larger inland waters, but chiefly maritime. South, in North America, to New Jersey and the Great Lakes.

SP. CHAR. *Adult, lightest phase:* Pileum, lores, and malar region, with entire upper surface, except the nape, uniform dark sooty slate, with a slight plumbeous tinge in certain lights; anal region and crissum uniform plumbeous-slate, sometimes mixed with whitish. Rest of the head and neck (including entire nape), and lower parts, except as described, immaculate white, the auricular region more or less deeply tinged with straw-yellow. Bill brownish white (dull brownish in the dried skin), the terminal third black; iris dark brown; legs and feet black, sometimes clouded with bluish.[1] *Adult, usual plumage:* Similar to the above, but jugulum and nape barred or transversely spotted with dusky, and the sides irregularly barred with the same. *Adult, melanotic phase:* Entirely dark sooty slate, with a plumbeous cast in certain lights. *Young, light phase:* Head, neck, and lower parts dull buff, everywhere barred with dusky; the bars broad and sharply defined on the crissum and flanks, faint or nearly obsolete on the head and neck. Upper parts brownish dusky, the scapulars and interscapulars tipped with buff, the rump and upper tail-coverts spotted with the same. *Young, dark phase:* Whole plumage sooty slate, the breast, abdomen, and sides narrowly and rather indistinctly, the crissum and upper tail-coverts broadly and sharply, barred with deep buff.



S. pomarinus.

Total length, about 20.00 inches; extent, 48.00; wing, 13.50–14.00; tail, 8.00–9.00; culmen, 1.45–1.75; tarsus, 2.00–2.10; middle toe (without claw), 1.60–1.75.

In the above diagnosis we have described the light and dark extremes of coloration, with an intermediate phase which characterizes perhaps a majority of individuals of this species. Scarcely two specimens are exactly alike, however, in the details of coloration, every condition between the light and dark extremes existing in a large series.

The Pomarine Skua, or Gull Hunter, is an eminently Arctic species, resident during the summer in high northern regions, chiefly within the Arctic Circle, and extending from Siberia, in Eastern Asia, entirely around the zone. It breeds so exclusively in remote and inaccessible places that but little is comparatively known of its habits at that season. In the fall and in winter it is a great wanderer, and is occasionally seen in the interior, on the Great Lakes, and on both of the Atlantic shores, and is found far down the southern coast, to Africa on the east, and to Florida on the west.

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[1] *Adult male:* "Bill blackish brown at the end, dingy yellow toward the base; iris brown; tibia, toes, webs, and lower half of tarsus black; the upper half light blue; claws black" (AUDUBON).

It is abundant during the winter on the coasts of Maine and Massachusetts, and is the common Gull Hunter of our fishermen. Single examples have been taken on Lake Michigan in midwinter.

A single example of this species was procured by Mr. MacFarlane on the Lower Anderson River, near the Arctic Ocean; it was shot in June, 1863. It was not noted by Mr. Dall as occurring in Alaska, and no specimen was secured; but Mr. Bannister refers to a *Stercorarius* with an apparently even tail, which he frequently observed at St. Michael's.

Mr. Kumlien states that this bird was observed by him at Bourne Bay, Newfoundland, August 16; and he met with it from that point to latitude 71°. It was abundant in many localities. He nowhere found it so common as on the southern shores of Disco Island, where it was breeding on inaccessible cliffs. This bird lives chiefly by plundering the Kittiwake; but will also attack other species — even the *glaucus*. It is also very destructive of young birds and eggs.

Specimens of this bird were secured at Fort Simpson by Mr. B. Ross; at Fort Rae by Mr. Clarke; at Fort Resolution by Mr. McKenzie; at Big Island by Mr. Reid; and it is said by Richardson to be a not uncommon species in the Arctic Seas and in the northern outlet of Hudson's Bay, where it subsists on putrid fish and other substances thrown up by the sea, and also on the matters disgorged by the Gulls which it pursues. It retires from the north in the winter, and makes its first appearance in Hudson's Bay in May, coming in from seaward. The Indians of the Hudson's Bay region look upon it as the companion of the Eskimos, and as partaking of all the evil qualities ascribed to that hated race, and therefore hold it in abhorrence. It is given by Professor Reinhardt as being a resident species in Greenland; and Mr. Bernard Ross met with it on the Mackenzie.

Professor Alfred Newton refers to Scoresby as having observed two species of Skua in Spitzbergen, but thinks it doubtful whether one of them was this bird or the *longicaudus*. Ross speaks positively as to a single example of this species having been seen in Parry's voyage; this flew past his boats, in latitude 82°. Professor Newton adds that some of his party saw a bird in Sassen Bay which Mr. Wagstaffe described as having the form of the tail unmistakably characteristic of the adult of this species. No specimen has, however, been actually secured at Spitzbergen.

An immature bird of this species is mentioned by Giraud as having been shot on the south shore of Long Island. Its occurrence on that coast he regarded as exceedingly rare. An example is recorded as having been obtained, July 4, 1869, on the Susquehanna, in Lancaster County, Pa., by Mr. Vincent Barnard; and an adult bird was secured by Professor Baird, during the summer of 1840, at Harrisburg, on the same river. Such occurrences, of course, can only be regarded as accidental, and cannot be readily accounted for.

J. Matthew Jones records ("Am. Nat." IV. 253) that, Oct. 4, 1869, a fine example of this species was shot at Digby, N. S.

Professor Newton states that on his voyage to Madeira the steamer in which he was a passenger was followed by a company of about thirty birds of this species, which kept in close attendance while the vessel was weather-bound at Torbay; and about as many more were around each of two other craft detained in like manner. The birds were very tame, coming close alongside the quarter-deck in quest of food; and dire was the strife and loud the contention as one lucky bird after another seized upon some choice morsel and conveyed it far astern to be devoured. A single specimen is recorded by Schembri, a naturalist of Malta, as having been captured at sea about twenty miles north of that island.

According to the observations of Mr. H. Saunders, made at Malaga, this species is the most abundant of the three kinds of Skuas occurring on the coast of Spain in winter, and chiefly on the Atlantic side.

It is given by Middendorff as occurring on the tundras of Northern Siberia, and is included in the list of those most Arctic in their distribution.

It was met with by Mr. G. Gillett on the coast of Nova Zembla; and Von Heuglin also states that it is by far the most common species in that island, as well as on Waigatsch. He found it feeding principally on lemmings (*Myodes*); and it was not unfrequently seen in flocks, especially on the ice-fields.

According to the observations of Mr. Wheelwright, it is rarely seen in the summer on the Scandinavian coast below the Arctic Circle. It is not known with certainty to breed on the coast of Norway, and is nowhere so common as is the *parasiticus.* It is occasionally seen, late in autumn, in the Cattegat and the Baltic. He adds that, so far as his experience goes, the eggs of all the Skuas have much the same appearance; they have a pale olive-green or yellowish-gray ground-color, and are irregularly blotched and spotted with two shades of reddish brown. The eggs of *Megalestris skua* are easily recognized by their size; those of the other three species are with difficulty distinguished from each other. They all vary in size, shape, and color. The egg of the *pomarinus* is usually thinner and more pointed at the smaller end than are the other two; but there is hardly any difference between the eggs of *parasiticus* and *longicaudus,* except, perhaps, that the egg of the latter species is thicker and a little blunter at the larger end, and usually greener in color, especially when first taken. Sommerfeldt states erroneously that the Pomarine Skua breeds inland, a little way from the coast.

The Pomarine Skua does not breed in any part of Great Britain, and is only a winter visitor there, coming down the lines both of the eastern and the western coast in the autumn — some remaining on the southern shores all winter. It also visits the shores of Germany, Holland, and France; and several young birds appear almost every year on the lakes of Switzerland.

Professor Newton speaks of this species — which he calls the Pomatorrhine Skua — as having been observed by several travellers in Iceland, but as not being common there. He saw but a single individual — on the day of his arrival at Reykjavik, April 27. This bird is also found on the Faröe Islands.

In the several Arctic voyages it has been observed on the coast of Greenland, at Whale-fish Island, in Prince Regent's Inlet, at Melville Island, and at Igloolik. A nest, containing two eggs, was found near Fury Point by Sir James C. Ross, on the margin of a small lake. This bird is said to form a rude nest of grass and moss, placed on a tuft in the marshes, or on a small rock. The eggs are two or three in number.

Audubon, when within a few miles of the coast of Labrador, observed one of these Skuas approaching his vessel. It resembled, in its manner of flight, the Pigeon-hawk, alighting on the water like a Gull, and it fed on some codfish-liver thrown to it. On the 30th of July a fine adult female was shot by one of the party. During the prevalence of a severe gale, while they were lying in the harbor of Bras d'Or, quite a number came about their vessel, but none within gunshot. They flew wildly about, with much grace, moving rapidly to and fro, at one time struggling with the blast, and at another drifting with it, and chasing with success the smaller species of Gulls, but never approaching the *Larus marinus*. They remained in the harbor until the gale had abated, when they all went to sea.

A single example of this species was procured on the Prybilof Group by Mr. Elliott, and was the only one seen by him. It is a rare visitor to those islands.

An egg of this species, procured by Mr. Kumlien in Greenland, measures 2.25 inches in length and 1.70 in breadth. Its shape is a rounded ovoid; its ground-color a deep olive drab, sparingly spotted with slate-colored markings, and others of both a light and a dark raw-umber color. These are chiefly at the larger end, where they become confluent. There are also a very few scattered dots of black.

Stercorarius parasiticus.

PARASITIC JAEGER; RICHARDSON'S JAEGER.

Larus parasiticus, LINN. S. N. ed. 10, I. 1758, 136; ed. 12, I. 1766, 226.

Stercorarius parasiticus, SCHÄFF. Mus. Orn. 1779, 62, pl. 37. — LAWR. in Baird's B. N. Am. 1858, 839. — BAIRD, Cat. N. Am. B. 1859, no. 654. — COUES, Key, 1872, 309; Check List, 1873, no. 541; ed. 2, 1882, no. 766; B. N. W. 1874, 611.

Catarractes parasita, PALL. Zoog. Rosso-As. II. 1826, 310.

? Catharacta coprotheres, BRÜNN. Orn. Bor. 1764, 38.

Catharacta cepphus, BRÜNN. Orn. Bor. 1764, 36. — LEACH, Syst. Cat. 1816, 39.

Larus crepidatus, BANKS, Hawkesworth's Voy. II. 1773, 15. — GM. S. N. II. 1788, 602.

Stercorarius crepidatus, VIEILL. Nouv. Dict. 1819, 155. — SAUNDERS, P. Z. S. 1876, 326. — RIDGW. Nom. N. Am. B. 1881, no. 698.

Lestris Richardsoni, SW. & RICH. F. B. A. II. 1831, 433, pl. 73. — NUTT. Man. II. 1834, 319. — AUD. Orn. Biog. III. 1835, 503; Synop, 1839, 332; B. Am. VII. 1844, 190, pl. 452.

Lestris Boji, Schleepii, Benickii, BREHM, Lehrb. Eur. Vög. 1824, 991, 993, 996.

Lestris thuliaca, PREYER, Reise n. Island, 1862.

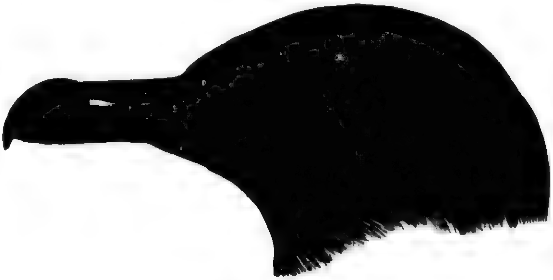
Lestris spinicaudus, HARDY, Rev. et Mag. Zool. 1854, 657.

Stercorarius tephras, MALMGR. J. f. O. 1865, 392.

Stercorarius asiaticus, HUME, Stray Feath. 1873, 269.

HAB. Northern part of northern hemisphere; south in America to New York, Illinois, and Colorado, and even to Brazil (Rio de Janeiro; *fide* SAUNDERS, Jour. Linn. Soc. XIV. 392). Breeds in the Barren Grounds of Arctic America.

SP. CHAR. *Adult, light phase:* Entire pileum, with lores, grayish brown; rest of the head, with entire neck and lower parts as far as the crissum, white, the head and neck more or less tinged with straw-yellow. Upper parts uniform brownish slate, becoming gradually darker on the primaries and tail. Crissum uniform brownish gray. "Bill grayish black, the upper part bluish; iris brown; legs and feet black" (AUDUBON). *Adult, dark phase:* Entirely uniform dark



Adult, dark phase.

fuliginous-slate, the remiges darker, nearly black terminally. *Young, light phase:* Head and neck streaked with dusky brown and fulvous-buff, the latter usually predominating; lower parts more or less distinctly barred, or spotted transversely, with the same. Upper parts brownish dusky, all the feathers bordered terminally with fulvous-buff. *Young, dark phase:* Prevailing color dark brownish slate, the wings and tail darker. Middle of the neck, all round, indistinctly streaked with grayish white; lower parts, except jugulum and upper part of breast, barred with grayish white, the bars broad and sharply defined on the crissum. Scapulars, interscapulars, wing-coverts, upper tail-coverts, and feathers of the rump narrowly tipped with pale dull buff. "Bill light blue, dusky at the end; iris brown; tarsi and basal portion of the toes and webs light blue, the rest black" (AUDUBON). *Downy young:* Entirely silky grayish brown, lighter on the under surface.

Adult, light phase.

Total length, about 18.50 inches; extent, 40.00; wing, 11.80–13.15 (average, 12.67); middle tail-feathers, 7.70–10.25 (8.66), the lateral rectrices, 4.90–6.25 (5.40); culmen, 1.15–1.40 (1.27); tarsus, 1.50–1.85 (1.70); middle toe, 1.20–1.45 (1.34).[1]

This species is almost if not quite as variable in plumage as the *S. pomarinus*, there being so much individual variation in this respect that we have described only the light and dark extremes of coloration.

As may be found noted under the head of that species, specimens occur which in every character of plumage, including length of the middle rectrices, are intermediate between the present bird and *S. longicaudus.* But there are two excellent characters, to which our attention has been directed by Dr. L. Stejneger, which may always be relied on. These consist (1) in the color of the tarsi, which in adult *parasiticus* are always black, but in *longicaudus* light bluish (or, in dried skins, more or less olivaceous); and (2) in the different proportions of the bill, *parasiticus* having the nasal shield much longer, measured along the culmen, than the distance from the anterior border of the nostril to the tip of the bill, these measurements being equal in *longicaudus.*

The Parasitic Jaëger is a northern species, although not as exclusively boreal as are the *pomarinus* and the *longicaudus.* It is common both to Arctic America and to the more northern portions of Asia and of Europe. Messrs. Evans and Sturge mention meeting with it on Spitzbergen. They saw it tormenting — as is its manner — almost every flock of Kittiwake Gulls and Terns, but they met with neither its nest, nor its eggs or young. Pennant narrates that the Arctic Skua — as he calls this species — was breeding, at his time, on the islands of Islay, Jura, and Rona; and Mr. A. G. More ("Ibis," 1865) thinks it highly probable that a few pairs still linger in some of the numerous islands of the Hebrides. It is said to be extinct at Jura.

Thompson, in his "Birds of Ireland," states that a pair was shot in 1837 on the Island of Rona. He further states that they still breed in Sutherland and in

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[1] Extreme and average measurements of twenty-two adults.

Caithness, and in all the three groups of the Scottish islands. Professor Newton mentions it as quite as common in Spitzbergen as anywhere that he has met with it, except the Lofoden Islands, off the coast of Norway. Parry's Expedition met with it in their journey over the ice, but north of 82° 2′. Dr. Malmgren found it breeding on the small islets near the coast, and once on the main island. It was also very common on Bear Island. Wheelwright mentions it as the most common of the Skuas off the coast of Norway, but he does not believe that either this bird or the Pomarine Jaëger goes far inland to breed, as does the *Stercorarius longicaudus.* It is given by Dr. Bessels as one of the birds taken in the "Polaris" Expedition.

It is included by Middendorff among the birds of Eastern Siberia, and is also mentioned as one of those that go to the farthest north. It is given by Mr. G. Gillett as having been met with by him in Nova Zembla, and is also mentioned by Von Heuglin as having been found in the same locality by his party. It was less common there than were the other Skuas.

In Iceland — according to Professor Newton — this species is common enough throughout the island, and was known to breed on the moors far inland. Faber says that it arrives in Iceland about the 25th of April, and remains until the middle of September. It inhabits the Arctic sea-coast of America as well as of Asia and Europe during the summer months, or from May to September, migrating in winter to more temperate regions. Numerous examples of this species were procured in the various Arctic expeditions on the Melville Peninsula, the North Georgian Islands, Baffin's Bay, and Spitzbergen. In its habits, so far as these are known, it does not appear to be different from the Pomarine. Dr. Reinhardt gives it as one of the resident species of Greenland; and Dr. Walker, in his Notes on the Voyage of the "Fox," mentions having met with it in entering the Danish port of Frederikshaab. Captain Blakiston received specimens from Hudson's Bay; and it is said to have been found on the Mackenzie by Mr. Bernard Ross.

Hearne refers to what is most probably this species as the "Black Gull," and usually known in the Hudson's Bay region as the "Man-of-War," from its pursuing and taking its prey from the smaller species of Gull known there as the "Black-Head" (Arctic Tern). In size it is said to be much inferior to the Glaucous Gull, and like the latter always makes its nest on islands, or on the margins of lakes and ponds. It is said to lay only two eggs, and its nest to be found at a considerable distance from the sea-coast. The length of its wings is given as very great in proportion to that of the body; the tail is uniform, and the two middle feathers are four or five inches longer than the rest. The eggs are sought for and eaten both by the Indians and the English; but the bird is generally rejected. It is quite common both in the spring and fall in the Bay of Fundy and along the coast of Maine. In the winter it is found off the coast of Massachusetts, and thence to the Chesapeake, occurring near the land chiefly in stormy weather. An adult specimen, a female, was shot at Oyster Bay South, and another example, a young male, was shot in October, 1842, on Gowannus Bay, Long Island. The latter was flying about near the surface of the water as if in pursuit of fish, though upon dissection nothing of the kind was found. Mr. Giraud does not regard it as at all common on the coast of Long Island, though of more frequent occurrence than the *pomarinus.*

Audubon found it more shy and difficult of approach than the *pomarinus,* its flight equally rapid and protracted, and its habits, in harassing the Terns and smaller Gulls, the same. Dr. Richardson speaks of its breeding in considerable numbers on the Barren Grounds at a distance from the coast, and of its feeding upon the small mollusca, so plentiful in the small lakes of the Fur Countries.

Mr. Bannister mentions this species as being quite common at St. Michael's, though less abundant, and, according to his observations, more shy, than *S. longicaudus.* Specimens were also obtained at Kadiak by Mr. Bischoff. Mr. Dall speaks of it as being common on the Yukon, as high up as Nulato, and also as abundant at the mouth of that river. The Indians and the Russians call it *razboinik*, or "the robber," and have many absurd notions in regard to it. Mr. Dall has never known it to alight except on the water or on a smooth beach. It is said to nest on the beach in the manner of the Gulls; but he was unable to obtain its eggs. The long feathers of the tail differ greatly even in the same individual. It is wonderfully swift on the wing.

Mr. MacFarlane found it breeding on the Barren Grounds, at some distance from the Arctic Sea. One nest was on the ground, found June 27. Both parents were near, and when closely pursued would fly a short distance and alight on the ground; and this they continued to do for some time. The nest contained two eggs, in one of which the embryo was much larger than it was in the other. Another nest, found July 8, was about a hundred yards from the sea-beach, and was a mere depression in the ground, lined with a few withered leaves. It contained one egg and one young bird in the down. The eggs so much resemble the surrounding soil in color that they are difficult to find. The nests were all mere depressions in the ground, lined scantily either with a few dried grasses or leaves, or with both. Specimens were taken by other Arctic explorers at Fort Resolution, Fort Simpson, Fort Rae, Fort Anderson, etc.

In Shetland these birds seem to breed in society, from fifty to sixty being met with at the same place. In Norway, however — as Mr. Hewitson states — they breed most commonly apart from each other, each pair taking possession of its separate island, upon the highest point of which they are almost constantly seen perching, and upon which they place their nests. The eggs are usually two in number, and are olive-brown in color, spotted with darker brown, 2.33 inches in length, and 1.66 in breadth. At the time Mr. Drosier visited Shetland the young were already hatched, and were discovered hiding in the long grass. They were covered only with down, their blue legs and black toes being already very distinct. The more advanced were of a beautiful light brownish color, distinctly barred and spotted with black; but as they grew older the brown color gradually disappeared. This species is occasional on the shores of Belgium and Holland. Mr. H. W. Elliott found it an infrequent visitor at the Prybilof Islands, where it was not known to breed, and where but four or five of these birds in all were seen. These would occasionally alight on the grassy uplands, and stand dozing for hours in an indolent attitude.

The numerous eggs of this species collected from the Arctic coast and the Anderson River Region ranged in their length from 2.00 to 2.40 inches, and from 1.50 to 1.70 in breadth. The ground-color is an olive-drab, but varies greatly, in some tending more to a green, in others to a gray, or even to a brown. The markings are equally various in their shades, and differ also in shape, size, and number. They exhibit a combination of sepia-brown, dark chocolate, and bistre, with obscure markings of stone-gray. In some the markings are all small, and are distributed with great uniformity over the whole egg.

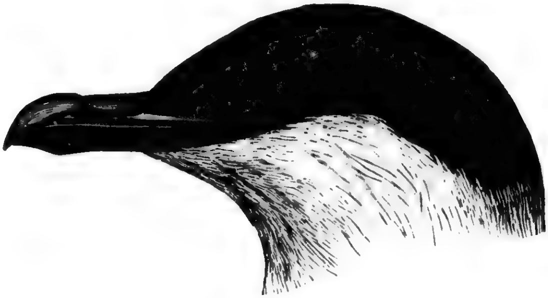
Stercorarius longicaudus.

THE ARCTIC JAEGER; LONG-TAILED JAEGER.

Stercorarius longicaudus, Vieill. Nouv. Dict. XXXII. 1819, 157. — Stejneger, Proc. U. S. Nat. Mus. Vol. 5, pp. 40–42.
Stercorarius longicaudatus, De Selys, Faune Belg. 1842, 156.
Lestris parasitica, Illig. Prodr. 1811, 273. — Less. Man. II. 1828, 288 (nec Linn.). — Sw. & Rich. F. B. A. II. 1831, 430. — Nutt. Man. II. 1834, 317.
Lestris parasiticus, Temm. Man. Orn. ed. 1815, 512. — Aud. Orn. Biog. III. 1835, 470; B. Am. VII. 1844, 192, pl. 452; Synop. 1839, 333.
Stercorarius parasiticus, Saunders, P. Z. S. 1876, 330. — Ridgw. Nom. N. Am. B. 1881, no. 699.
Lestris crepidata, Brehm & Schill. Beitr. z. Vög. III. 1822, 861 (not of Banks, 1713).
Lestris Buffoni, Boie, Meyer's Tasch. III. 1822, 212. — De Kay, N. Y. Zool. II. 1844, 315, pl. 133, fig. 291.
Stercorarius Buffoni, Coues, Pr. Phil. Ac. 1863, 136; Key, 1872, 309; Check List, 1873, 542; ed. 2, 1882, no. 767; B. N. W. 1874, 615.
Stercorarius cepphus, Steph. Shaw's Zool. XIII. 1826, 211, pl. 23. — Lawr. Baird's B. N. Am. 1858, 840. — Baird, Cat. N. Am. B. 1859, no. 655.
Lestris microrhynchus, Brehm, Handb. Vög. Deutschl. 1831, 725.
Lestris Lessoni, Degl. Mém. Ac. R. Lille, 1838, 108.
Lestris brachyrhynchus, Brehm, Vogelf. 1855, 337.
Lestris Hardyi, Bonap. Tabl. d. Longipenn. Compt. Rend. 1856, 770; Consp. II. 1857, 210.
Lestris Brissoni, "Boie," Degl. & Gerbe, Orn. Eur. II. 1867, 400.

Hab. Northern part of northern hemisphere, breeding in Arctic districts, and migrating south in winter to the Northern United States.

Sp. Char. *Adult, light phase:* Entire pileum and upper part of nape, including lores, malar region, and orbital region, sooty black; rest of the head and neck, including lower portion of the nape, straw-yellow, paler on the chin and throat. Remaining upper parts rather dark brownish cinereous or slate-color (more ashy on the back, where lighter anteriorly), the remiges and rectrices darker, especially toward ends, where nearly dusky blackish. Jugulum (sometimes the breast also, or, rarely, even the abdomen) white, shading gradually into grayish, the entire crissum, flanks, sides, and usually the abdomen being uniform deep ash-gray, becoming gradually lighter anteriorly. "Bill grayish black, the upper part bluish; iris brown; feet black, but with the greater part of the tarsus yellow"[1] (Audubon).



Total length, about 23.00 inches; extent, 45.00; wing, 11.55–12.85 (average, 12.25); central rectrices, 10.50–14.50 (12.89); lateral rectrices, 4.75–6.00 (5.25); culmen, 1.10–1.30 (1.19); tarsus, 1.50–1.80 (1.66); middle toe, 1.08–1.30 (1.20).[1]

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[1] *In life*, the color of the tarsi is light grayish blue, which in *dried skins* sometimes changes to yellow.

It is somewhat curious that in the entire series of eighteen examples of this species contained in the collection of the National Museum there is not a single young bird, nor one representing a melanotic phase, all being in the plumage described above. The only notable variation in this series consists in the extent of the plumbeous of the under surface of the body, a very few specimens having this confined to the posterior portions, the abdomen being white, just as in *S. parasiticus.* Usually, the two species may be readily distinguished by this restriction of the plumbeous underneath, in *S. parasiticus*, and its extension forward over the abdomen, almost or quite to the breast, in *S. longicaudus.* It is sometimes, though very rarely, difficult to distinguish the two even by the length of the central rectrices; one example of *S. parasiticus* having these feathers 10.25 inches long, and narrower than usual, while an individual of *S. longicaudus* has them only 10.50 long, and broader than in most examples of that species. Upon the whole, there is sometimes a very close resemblance between these two forms in their normal phase of coloration (the only one in which we have seen *S. longicaudus*).

In fact, there can be no question that in every character of plumage or coloration, including the length and breadth of the middle rectrices, the number of primaries having white shafts, the relative extent of gray and white on the lower parts, etc., the two species do, in some specimens, completely intergrade, notwithstanding the fact that typical examples may be very readily distinguished. The shape of the bill and the color of the tarsi in the adults, however, it is believed are constantly different in the two species, as stated under the head of *S. parasiticus* and in the synopsis of the species.

These intermediate specimens may, of course, be hybrids; but it seems more reasonable to suppose that the two forms represent merely extreme modifications of one species.

Buffon's Skua partakes of all the peculiarities of this strongly characterized genus, especially in its Arctic distribution. It appears to be the most northern of its family, and to have, during the season when it is not breeding, a somewhat wider range of migration than the others. In the summer it is found in all parts of the region near the Arctic Circle, breeding from Siberia around the circuit, including Northern Asia, Europe, and America, and the Arctic islands.

It is a resident species in Greenland, and is also found in Iceland, although not given by Faber, who confounded it with the *parasiticus.* In 1858 Mr. Wolley and Professor Newton met with it several times near Kyrkjnvogn; and others are mentioned as having been obtained elsewhere. Mr. Bernard Ross procured specimens of this bird at various points on the Mackenzie; Mr. Murray mentions having seen it on Hudson's Bay; and Captain Blakiston received specimens from that region.

According to Sir John Richardson, it inhabits the Arctic sea-coasts of America as well as of Europe, in the summer, migrating in winter to more temperate localities. Numerous specimens of this Gull were brought back by the Arctic expeditions from Melville Peninsula and the North Georgian Islands.

Mr. A. G. More states ("Ibis," 1865), on the authority of Mr. R. G. Shearer, of Ulbster House-wick, that some seven or eight years before that time a few pairs of the Long-tailed Skua could always be found breeding at that place, together with the more common species, on a large inland flat studded with small dark lochs. In 1860 a pair of these Skuas was shot on this ground during the breeding-season; and in June, 1862, a pair was obtained on one of the Outer Hebrides, where these birds were probably breeding.

Captain W. H. Feilden ("Ibis," October, 1877) states that this was the only species of Skua Gull which the Expedition of 1875–1876 saw in Smith's Sound, where it arrived in considerable numbers in the neighborhood of the winter quarters of the party during the first week in June; after that date it was to be seen at every hour of the day, searching for lemmings. It lays its two eggs in hollows in the ground, and defends them with great bravery. On several occasions Captain Feilden had to strike at the old birds with his gun-barrel to defend himself against their attacks as he was robbing their nests. He could always easily distinguish this species from the *parasiticus* by the mottled color of its tarsus and the webs of the feet, which in the latter are black.

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[1] Extreme and average measurements of eighteen adults.

Mr. Kumlien mentions meeting with a few on the Upper Cumberland waters in June; but none breed so far south. It is one of the first birds to come in the spring; and — as he has no doubt — its range is more northerly than that of any other bird of this genus.

According to Middendorff this is one of the common species of Eastern Siberia, where it is found to the extreme northern parts of the main land and also on the islands north of Asia. Mr. G. Gillett gives it as quite abundant on Nova Zembla, especially on the west coast and in the Kara Sea, where it was found in all stages of plumage. Every flock of Kittiwakes was attended by a number of the Skuas, which swooped down upon them in the manner of Hawks, and obliged them to disgorge their prey. Von Heuglin also found these birds very numerous in the same locality, generally in pairs.

Professor Newton mentions having seen a specimen of this Skua obtained by Professor Malmgren on the 12th of July near the Russian Hut, in Advent Bay, Spitzbergen, who also observed it on two other occasions in Ice Sound; but that it breeds in that region has not been, as yet, definitely ascertained.

According to Mr. Wheelwright, although it is occasionally seen in other parts of Scandinavia, its peculiar breeding-home is on the Lapland fells. There it is not always seen in the same numbers every year. The first eggs he obtained were found on the 3d of June; and never but once did he find more than two eggs in a nest. The nest is nothing more than a few pieces of dry hay scratched together on the ground, generally near the water, never on the real snow-fells. Although it breeds in colonies, he never found two nests close together. In the young bird just ready to fly, the plumage greatly resembles that of the common Skua, and the tail is perfectly even.

Richardson found this species breeding in considerable numbers in the Barren Grounds, at a distance from the Arctic coast. It feeds on the shelly mollusca so plentiful in the small lakes of the Fur Countries, and harasses the Gulls just as others of this genus do.

It is common in the Bay of Fundy and on the coast of Maine in the fall, and again in the spring, and is occasionally seen off Cape Ann and Cape Cod during the winter; and occasionally in very severe weather a few of these birds are driven upon the coast. A single specimen is recorded by Mr. Giraud as having been taken on Long Island, shot in the vicinity of Islip.

During the winter — according to Audubon — this species ranges along our southern coast as far as the Gulf of Mexico, usually singly or in pairs. In April he observed it congregating in flocks of from ten to fifteen, as if for the purpose of returning north to breed.

According to Selby, it breeds on several of the Orkney and Shetland Islands, and is gregarious during that period; the situations selected for its nests being unfrequented heaths at some distance from the shores. The nest is composed of dry grass and mosses, and its eggs are said to be of a dark oil-green, with irregular blotches of liver-brown. It is very courageous at this season, and attacks every intruder within the limits of its territory by pouncing and striking at the head with bill and wings.

The young, when ready to leave the nest, are deep gray on the top of the head; neck light gray, with longitudinal streaks of brown, with a mixture of umber-brown, yellowish brown, and reddish in the residue of their plumage.

This species was procured by Mr. Dall at the mouth of the Yukon River, and by Mr. E. K. Laborne at Anadyr Gulf, in Eastern Siberia. Mr. Bannister found it common at St. Michael's. All the specimens that he obtained were shot on the ground, they having apparently a habit of sitting on the mossy *tundras*, or heaths; and not infrequently he has followed one for more than a mile at a time, the bird flying short distances, and alighting just out of range. This habit is explained by some by the statement that it feeds on the berries that abound in these situations; by others, that it is in quest of the eggs of some other species, which it is accused of devouring. Mr. Bannister was not able to verify either explanation.

Mr. E. Adams ("Ibis," 1878) mentions the arrival of this species on Norton Sound, Alaska, on the 7th of May; after which several were always to be found near the stages for drying fish, by plundering which they seemed chiefly to subsist. Some of them frequented the marshes, hunting about for eggs, and robbing the Terns and small Gulls. They bred about the dry knolls in the marshes.

Mr. MacFarlane found it abundant throughout the Barren Grounds, as well as in the neighborhood of Fort Anderson, and also on the shores of Franklin Bay and the Arctic Ocean. The nests were all mere depressions in the soil, scantily lined with dry hay, leaves, and the like, and the number of eggs was never more than two. One nest is mentioned as having been discovered in a very thinly wooded plain, June 28. The eggs contained well-developed embryos. The parents were both present, but did not make so much noise as usual, and when closely approached flew off to a tree in the vicinity. One nest was near a small lake, and it was lined with a few withered leaves of grasses. Another was some distance from a lake, and both parents flew and screamed over the heads of the intruders while these were searching for the nest. One egg was only slightly advanced, while the other was nearly ready to hatch. In another instance the parents made an unprecedented disturbance, flying close overhead, and were easily secured. In some instances the birds examined were found to have partaken of a quantity of last year's berries, thus confirming the statements to that effect made by the natives to Mr. Dall. Another memorandum states that a nest with two eggs was found, June 27, on a dry turfy piece of ground, about fifty yards from the beach, on Franklin Bay. There really was no nest, and the eggs were extremely difficult to find, owing partly to their color being exactly similar to that of the soil, and partly to the efforts of both parents to mislead those searching for the nest — to effect which they scream and fly over the head of the intruder; and if their treasure seems on the point of being discovered, the parent birds — especially the female — become so savage that there is danger of actual injury resulting from their attacks. In another instance, where a nest was being sought for on the Barren Grounds, June 26, 1863, the parents endeavored by various stratagems to lead the intruder away from the place; and when the eggs were finally discovered, they began a furious attack upon his head, so that it was necessary to shoot them in self-defence. In another instance, on the same day, a female sitting on her nest fluttered off when discovered, as if with a broken wing, much as a Plover would do in a similar case.

In a note made June 28, 1863, Mr. MacFarlane says: "At midnight the sun is several degrees above the horizon, and there is, of course, no night. During the period answering to it, however, as many as twenty or thirty birds of the genus *Stercorarius* are sometimes seen sitting or standing on the ground, each bird at the distance of a few yards from its fellow. They probably repose at such times, as they never move, except when closely approached. No eggs have ever been obtained by us in the vicinity of such resting-places. During the day, also, we have frequently observed two or more birds quietly reposing, or moving very slowly along the ground; and this, too, where no nest actually existed."

Examples of this species were also secured at Fort Peel's River by Mr. C. P. Gaudet, and at Fort Yukon by Mr. McDougal.

Mr. H. W. Elliott reports this species as being seldom seen in the Prybilof Group. The single specimen in his collection is one of the only two he observed while in that locality. When he came upon them — July 29, 1872 — they were apparently feeding upon insects, and upon a small black berry that ripens on the high lands — the fruit of the *Empetrum nigrum.*

The eggs of this species are not always distinguishable from those of the *parasiticus,* although they are smaller than those of that species, on the average; but exceptionally large specimens of the egg of *S. longicaudus* are sometimes as large as exceptionally small ones of *S. parasiticus.* They range from 2.10 to 1.90 inches in length, and from 1.50 to 1.40 in breadth.

ORDER TUBINARES.

THE TUBE-NOSED SWIMMERS.

CHAR. Swimming birds with tubular nostrils, the horny covering of the bill consisting of several distinct pieces, separated by more or less marked grooves. Terminal portion of maxilla produced into a strongly hooked unguis. Feet fully webbed, anteriorly. Hallux rudimentary, consisting of an elevated sessile, often minute, claw, sometimes wholly absent. Wings usually very long. Basipterygoids usually absent? Egg single, white.

The number of families into which the Order Tubinares is properly divisible is an unsettled question. In a "Report on the Anatomy of the Petrels (*Tubinares*)," which forms the leading article of Vol. IV. of the Zoological Reports of H.M.S. "Challenger," the late Professor W. A. Forbes divides the Tubinares into two families as follows: (1) *Procellariidæ*, including as sub-families *Procellariinæ* and *Diomedeinæ;* and (2) *Oceanitidæ*, composed of the genera *Fregetta*, *Pelagodroma*, *Oceanites*, and *Garrodia*. According to this arrangement, the Albatrosses are held to be much more nearly related to the genera *Procellaria*, *Cymochorea*, and *Halocyptena* than are *Oceanites* and the other *Oceanitidæ*[1] — a proposition which, notwithstanding the reasons advanced,[2] we are not prepared to accept.

The arrangement we have to propose is not supposed to be a perfectly natural one, but there can be no question as to the naturalness of the groups defined below: —

1. **Diomedeidæ.** Wings very long and narrow, on account of the extreme development of the humerus and ulna. Remiges 39–50 (the largest number in any known bird). Nasal tubes lateral, widely and completely separated by the intervening "culminicorn." No hind toe. Size very large.
2. **Procellariidæ.** Wings lengthened, but of different structure from the preceding (remiges 20–39, usually about 30). Nasal tubes near together, laid side by side upon the culmen, the nostrils opening anteriorly. Hind toe present, though sometimes minute. Size extremely variable.

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[1] ". . . In spite of the general superficial resemblance of the *Oceanitidæ* to the smaller forms of *Procellariidæ*, with which all ornithologists previous to Garrod had confounded them, the differences between the two families are, it will be seen, numerous and important. The special points of resemblance which the *Oceanitidæ* have with such Procellarian genera as *Procellaria* and *Cymochorea* — such as the general small size, style of coloration, form of skull, comparative simplicity of the *tensor patagii* arrangement, simple sternum and syrinx (the last three peculiarities being also common to *Pelecanoides*) — may best be explained by supposing that these small Procellarian forms are on the whole less specialized than the larger ones (Fulmars, Albatrosses, Shearwaters, etc.), and so retain more of the characters possessed by the primitive and now extinct common form from which both the *Procellariidæ* and *Oceanitidæ* must have been derived" (FORBES, t. c. p. 56).

[2] "According to modern ideas, the object of a classification is not so much to represent morphological facts as to indicate the phylogenetic relations of the different forms concerned" (FORBES, t. c. p. 58).

3. **Pelecanoididæ.** Wings short, and general appearance decidedly Auk-like. Nasal tubes vertical, the nostrils opening superiorly.

The *Pelecanoididæ* are not represented in the North American fauna; and both the other families are known mainly as irregular though often abundant visitors to the coast, and are even occasionally driven by gales far inland.

FAMILY DIOMEDEIDÆ. — THE ALBATROSSES.

The three known genera of this family may readily be distinguished by the following characters: —

A. Sides of the mandible without longitudinal groove. Wing three or more times as long as the short rounded tail.

1. **Diomedea.** "Culminicorn" much broadest at the base, where joined closely to the "latericorn."
2. **Thalassogeron** (*gen. nov.*).[1] "Culminicorn" narrow, and of equal width from the middle of the culmen to the base, where widely separated from the "latericorn" by the interposition of a strip of naked skin extending from the nasal tubes to the forehead. Bill much more compressed.

B. Sides of the mandible with a deep longitudinal groove, extending the entire length of the lateral lamina. Wing only about twice as long as the graduated or cuneate tail.

3. **Phœbetria.** In his "Report on the Anatomy of the Petrels" (Zoology of H.M.S. "Challenger," Vol. IV. p. 57), the late Professor W. A. Forbes says that these "three good genera of Albatrosses . . . may be distinguished, independently of external characters, as follows: —

"**Diomedea.** Tongue very short; uncinate bones more or less styliform (*Diomedea exulans* and *brachyura*).

"**Thalassiarche** [= **Thalassogeron**]. Tongue intermediate; uncinate bones styliform (*Thalassiarche culminata*).

"**Phœbetria.** Tongue much longer; uncinate bones flattened; hallux better developed than in the other forms, and with an external claw (*Phœbetria fuliginosa*)."

The type of *Thalassarche*, REICHENBACH, being the *Diomedea melanophrys* — a true *Diomedea* — it unfortunately becomes necessary to give a new name for the genus represented by *T. culminata*, and we have selected *Thalassogeron* as being an appropriate one.

GENUS **DIOMEDEA**, LINNÆUS.

Diomedea, LINN. S. N. ed. 10, I. 1758, 132; ed. 12, I. 1766, 214 (type, *D. exulans*, LINN.).
Albatrus, BRISS. Orn. VI. 1760, 125 (same type).
Phœbastria, REICHENB. Syst. Av. 1852, v (type, *Diomedea brachyura*, TEMM.).
Thalassarche, REICHENB. t. c. v (type, *Diomedea melanophrys*, BOIE).

CHAR. Size very large (one species perhaps the largest bird of flight); wings extremely long, through very narrow; sides of the mandible smooth, without a longitudinal groove; bill moderately or slightly compressed, the culmen broad and rounded; tail rounded, one third as long as the tail, or less.

The Albatrosses are strictly oceanic birds, which rarely visit the land, except at their breeding-grounds, which are usually remote islands or isolated rocks. The species which have been obtained in North American waters are the following: —

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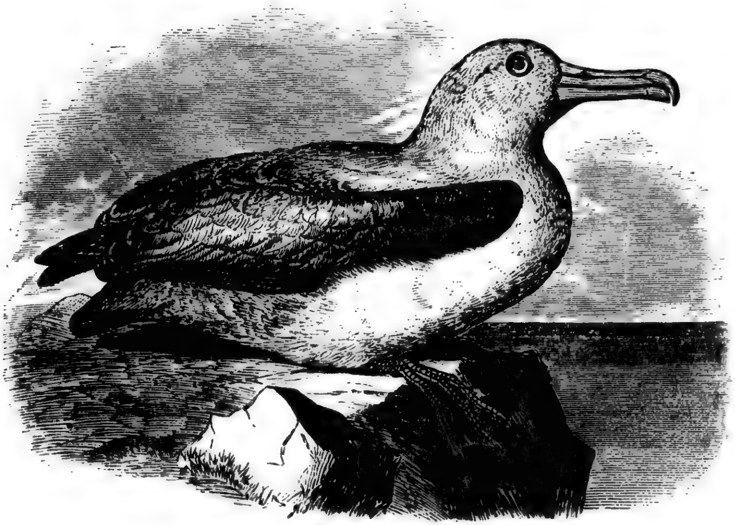
[1] *Thalassogeron* (*gen. nov.*), θάλασσα = *mare*; ὁ γέρων = *senex*.

A. Culmen very concave; feathers at base of maxilla extending in an angle nearly or quite to the base of the nasal tube, that on the mandible forming a still more decided angle. (*Diomedea.*)

1. **D. exulans**. Wing, 26.50–29.00 inches. *Adult:* White, the remiges blackish. *Young:* Dusky, with fore part of head whitish (older individuals with more white).



D. albatrus, adult.

B. Culmen slightly concave, the bill more compressed; feathering at base of maxilla extending obliquely in a nearly straight line far back of the nasal tube, that of the mandible also nearly straight.

a. Latericorn narrower at base than in middle portion. (*Phœbastria.*)

2. **D. albatrus**. Wing, 22.00–23.00 inches; culmen, 5.50–5.60; depth of bill at base, 1.95–2.05; tarsus, 3.80–4.00; middle toe, 4.65–4.90. *Adult:* White, the pileum and nape bright straw-yellow; tail, remiges, etc., slaty brown, the shafts of the quills bright straw-yellow; bill grayish white, more yellowish on the unguis, and purple brownish on the mandible; legs and feet grayish dusky. *Young:* Uniform sooty, the pileum and nape blackish; shafts of primaries bright straw-yellow; bill pale horn-yellow; legs and feet grayish brown. *Hab.* Off the Pacific coast of North America (especially of Alaska).

3. **D. nigripes**. Wing, 18.50–20.50 inches; culmen, 4.00–4.25; depth of bill at base, 1.45–1.60; tarsus, 3.50–3.70; middle toe, 4.05–4.40. Uniform dusky (more grayish below), the crissum, upper tail-coverts, and base of the tail white in the adult; anterior portion of the head whitish; bill dusky purplish brown; legs and feet black. *Hab.* Pacific coast of North America.

b. Latericorn much broader at base than in middle portion. (*Thalassarche.*)

4. **D. melanophrys**. Wing, 19.50–20.00 inches; tail, 8.00–8.50; culmen, 4.30–4.70; tarsus, 3.00–3.25; middle toe, 4.00–4.30. *Adult:* Head, neck, rump, upper tail-coverts, and entire lower parts white, the side of the head with a more or less distinct grayish stripe, darkest immediately before and behind the eye; back and scapulars brownish slate, more ashy anteriorly; wings uniform dark brownish slate; tail brownish gray, the shafts of the feathers yellowish white. Bill yellowish, the ungui and base of culmen sometimes (in younger individuals?) tinged or clouded with grayish; legs and feet "pearly slate." *Hab.* Southern oceans; casual (?) off coast of California.

Diomedea exulans.

THE WANDERING ALBATROSS.

Diomedea exulans, LINN. S. N. ed. 10, I. 1758, 132; ed. 12, I. 1766, 214. — NUTT. Man. W. B. 1834, 340. — GOULD, B. Austr. VII. 1848, pl. 38. — LAWR. in Baird's B. N. Am. 1858, 821. — BAIRD, Cat. N. Am. B. 1859, no. 630. — COUES, Pr. Philad. Acad. 1866, 175. — KIDDER, Bull. U. S. Nat. Mus. no. 2, 1875, 19; no. 3, 1876, 11. — SCL. Rep. "Challenger," Zool. II. 1881, 147.
Diomedea spadicea, GMEL. S. N. I. ii. 1788, 568 (= young).
? Diomedea adusta, TSCHUDI, J. f. O. 1856, 157, no. 7.

HAB. Southern oceans in general, but occasionally wandering north of the equator. Near Dieppe, France, and near Antwerp, Belgium, September, 1833 (BOIE, "Isis," 1835, p. 259); three specimens near Chaumont, France, November, 1758 (DEGL. & GERBE, "Orn. Eur." 2d ed. 1867, p. 368); ? coast of Norway, one specimen (BRÜNN. "Orn. Bor." 1764, p. 31). "Rare and accidental in the Middle States" (BONAPARTE); "Accidental to the coasts of the central part of the Union" (NUTTALL). Tampa Bay, Florida?[1]

SP. CHAR. *Adult:* Prevailing color yellowish white, the remiges dusky, and, except in very old birds, the larger wing-coverts and dorsal region more or less barred irregularly with blackish. Bill white (KIDDER), or "delicate pinky white, inclining to yellow at the tip" (GOULD); iris "very dark blue to purple" (KIDDER), or "very dark brown" (GOULD); feet "white, with a pale-blue tint" (KIDDER), or "pinky white" (GOULD); "eyelash bare, fleshy, and of a pale green" (GOULD). *Young:* Prevailing color dark fuliginous or blackish brown, older individuals varied with white according to age, the fore-part of the head and lining of the wings always more or less white. Bill "pinkish white" (KIDDER).

Total length, 47.00–55.00 inches; extent, about 10–12 feet (average, 10 feet 1 inch, *fide* GOULD); average weight, 17 lbs., maximum weight about 20 lbs.

The Wandering Albatross of the Southern Pacific and Atlantic oceans has probably but little claim to a place in the fauna of North America. I am unable to find any well-authenticated instance where this bird is known to have been taken in the vicinity either of the Atlantic or of the Pacific coast of the United States. Numerous specimens were collected in the Wilkes Exploring Expedition, both from the Atlantic and the Pacific oceans; and from the numerous and careful records of Dr. Pickering it is evidently both the most numerous and the most widely diffused of its family. It was first met with in the Atlantic January 22, in lat. 40° S., on the passage from Rio de Janeiro to the Rio Negro, occasionally afterward to Cape Horn, and as far south as the cruise extended. It seemed much more common in the Pacific, especially on the passage to Callao. On the 4th of April, in lat. 42° S., numbers of these birds were taken with hooks and lines, their abundance being in all probability due to the fact that the ship was then passing over whaling-ground.

Mr. E. L. Layard mentions meeting with them in great numbers in the Antarctic Ocean, lat. 44° S.; they were chiefly young birds. This species is given by Mr. G. R. Gray as one of those occurring in New Zealand.

Captain F. W. Hutton ("Ibis," 1865) states that the food of this Albatross consists entirely of the oceanic mollusca, small crustaceans, medusæ, and the refuse thrown overboard from ships. No remains of fish were found in its stomach. It always settles down slowly to eat, and can only be caught with the hook when the vessel is moving slowly through the water, and when plenty of line can be paid out. The best bait is a piece of the rind of raw salt pork, as this is so tough that other birds cannot get it off the hook, which usually catches in the curved end of the upper mandible. The habits of the Albatross are diurnal, both on land and at sea; and it is never known to fly by night. It was rarely seen north of 30° south latitude. In April, 1854, Captain Hutton met with a single bird in lat. 26° S.; but from the manner in which it was hastening directly south it was supposed to be a released prisoner. This Albatross was found very common south of lat. 40° S. — monopolizing nearly the whole of Prince Edward's Island and the southeastern portions of Kerguelen Island, where it retires tc breed in October. The nest is always placed on high table-land, and is in the shape of a frustum of a cone, with a slightly hollow top; it is made of grass and mud, which the birds obtain by digging a circular ditch about two yards in diameter, and pushing the earth toward the centre until it is about eighteen inches high. In this nest the female lays one white egg, which is not hatched until January.

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[1] I have recently been informed, on what I consider reliable authority, of the capture of a specimen of this species in Tampa Bay, Florida, my informant having the head in his possession. Up to this writing, however, he has been unable to get the specimen from a box which had been placed in storage during his absence from the city. — R. R.

At a certain time of the year — between February and June — the old birds leave their young, going to sea, and not returning until the following October, when they arrive in large numbers. Each pair goes at once to its old nest, and after a little fondling of the young one, which has remained near the nest the whole time, they turn it out, and prepare the nest for incubation. The deserted young ones are usually found in good condition and lively. When the old birds return, the young ones usually keep about the parents, and nibble at their heads until the feathers between the beak and the eyes are removed and the skin made quite sore. The young birds do not go far from the land until the following year, and then accompany the old ones to sea. How the young birds obtain their food has not been explained; but it is positively averred that no old birds are seen near the islands for several months together. Captain Hutton is of the opinion that the young birds are of nocturnal habit, and feed by night; but in this he is not confirmed by the observations of his friend Mr. Harris — an engineer in the Royal Navy — who is also quite certain that each bird revisits its own nest, and uses it again for its next brood. The instinct which thus guides the Albatross, after its long wanderings, to return to its own nest, cannot but be regarded as extremely remarkable.

The flight of the Albatross, as with outstretched, motionless wings it sails over the surface of the sea, is described as being truly majestic. At one time the bird rises high in the air, and then with a bold sweep, inclined at an angle with the horizon, descends until the tip of its wings just touches the crests of the waves as it skims over them. When it sees something floating on the water, and prepares to alight, the whole appearance of the bird is changed. Its wings are raised, its head thrown back, its back drawn in, while its enormous feet are thrust out to their full extent; and with a hoarse croak it drops upon the water, where it floats like a cork on the surface. In order to rise again, it stretches out its neck, and with great exertion of the wings runs along the top of the water, until, having obtained a sufficient impetus, it launches once more into the air.

The Albatross is never seen to dive. When on deck it is unable to stand, and cannot rise unless a strong wind is blowing, but lies helpless on its breast. When first caught it ejects a quantity of oil.

Mr. Howard Saunders ("Ibis," January, 1866) states that he has observed this Albatross fly at night, both by moonlight, and afterward, in the summer twilight of the Antarctic seas; he has watched these birds come sweeping out of space, wheel over the main truck, and then disappear, without so much as one flap of their huge wings.

Captain Hutton ("Ibis," 1867, p. 185) mentions that on his voyage in 1866 from London to New Zealand, he first met this Albatross April 5, in lat. 34° 15′ S., and saw birds of this species afterwards all the way to New Zealand. One that was caught — a male — measured ten feet across the wings, and weighed sixteen pounds. The fat on its breast was half an inch thick. It was taken in the morning, and its stomach was empty.

Captain E. L. Layard, who received several fine eggs of this species from Captain Armson, collected by the latter on the Crozette Islands, states ("Ibis," 1867) that the egg bears a marked similarity in form and color to that of *Phœbetria fuliginosa*, measuring 5.00 by 3.30 inches. Captain Armson also brought nestlings of several ages, and a young bird only about six days old, which was covered with a pure white silky down. The bill was the most remarkable feature, the tips of the mandible being armed for about three quarters of an inch with obtuse tumid sheaths, hard, white, and shining, like china. Mr. Layard was informed by the sealers that the Albatross feeds its young, all the time it is in the nest, with squids. The young birds remain until driven away by the old ones when these need the nest again. The young are in the nest growing very slowly, but are very fat, and not at all fishy. The sealers ridicule the suggestions of Captain Hutton that the young Albatross can subsist without food any length of time.

Captain Sperling ("Ibis," 1868) is of opinion that this Albatross is seldom seen near land. He has never met with it north of the twenty-seventh parallel of south latitude, and does not believe that it ever visits the northern hemisphere. He discredits the statements in regard to the examples said to have been taken in Europe, and thinks this species has no more right in a northern avifauna than an escaped Cockatoo would have. The statement of Nuttall, that the Albatross flies near the water, watching for flying-fish, is purely imaginative. It never takes food while on the wing, nor could this bird possibly do this. In regard to its powers of flight, the Captain remarks: "Having attentively watched the flight of the Albatross, I have failed to detect the mysterious and wonderful power of wing ascribed to it by observers who have perhaps been more highly favored. None can regard without admiration the beautiful picture presented by this bird, cleaving its way in graceful curves and sweeps over the wild troubled waves of the Atlantic; but its immense pectoral muscles and light hollow bones, added to its surface of wings, amply account for all."

Captain Sperling visited, in September, 1868, the Island of Tristan d'Acunha, and communicated in a letter to the "Ibis" (1872, p. 75) some additional information in regard to this bird. He found it nesting on the highest ledges of the cliffs, at so great an altitude as to present the appearance of a mere speck. The inhabitants stated most positively that the Albatrosses remained about the island throughout the year, laying their eggs in January, and the young flying in November; and that consequently there is almost always on the island a supply of young birds. These are consumed for food in great quantities, and appear to be considered a delicacy. The northern range of this species is given as from 27° to 25° south on the Atlantic coast of Africa, and at 27° on the eastern. On the Atlantic coast of South America it is 24° south.

Frederick Stoltenhof, who resided two years in the same group, in his account of the birds visiting Inaccessible Island, mentions this Albatross. In the latter part of November it appears singly, and alights on the highest portion of the island — avoiding the high tussock-grass, from which it with difficulty rises. It builds a circular nest, slightly concave at the top, about eight feet high, and broader at the bottom than at the top. This nest is made of earth and grass, the bird availing itself of rainy weather, when the soil is soft, and a natural mortar provided. In shaping it the earth is hammered down with the flat side of the beak; and the rows of nests are like a lot of round forts with, in wet weather, the surrounding fosse. Both birds work at their nest; and about the middle of January a solitary egg is deposited, which requires nine weeks for incubation. During their stay at the island one or the other of each pair goes to the sea in search of food each day. Not more than two hundred pairs of this species visit the island. They leave at the beginning of July, and are not seen again until November. The egg is good to eat; but when cooked, the white portion becomes grisly and hard. The young bird is eaten, and is regarded as excellent food.

The following interesting account of this species, by Dr. J. H. Kidder, U. S. N., is from that gentleman's "Contributions to the Natural History of Kerguelen Island,"[1] pp. 19–21: —

"None of these birds had shown themselves in the neighborhood of our camp until December 17, when Mr. Train captured and brought in the specimen No. 181, which he had carried more than two miles. It was found near an old nest, seemingly about to rebuild it; but no egg was found until December 30. On the 2d of January the steam-launch of the 'Monongahela' carried me several miles down the beach to the low strip which connects Prince of Wales Foreland with the mainland. Here I saw very many Albatrosses nesting upon hillocks, built up some two feet, or more, from the ground. The nests are composed mostly of grass, and, being of different heights, seemed to have been used again, and added to, year after year. I counted twenty-three birds in sight at one time, each perched upon its nest. Being conspicuous by the whiteness of their plumage, and rarely very near together, they rather remind one of the whitewashed cairns set up by surveyors. Driven from the nests, and compelled to walk, they look not unlike overgrown geese. The distribution of their weight compels them to stretch out their necks horizontally, and to walk with a widely-swaying gait. Two approached each other as I was watching them, and went through with some very odd manœuvres. One raised its head and spread out its wings as if to embrace the other, which remained with wings folded. Both then clattered their bills, and touched them together, first on one side and then on the other. This manœuvre was repeated several times. *Phœbetria fuliginosa* has the same trick of touching bills with its mate, and clattering the mandibles, about pairing-time; but I have never seen them approach one another with outspread wings. All of the nesting Albatrosses that I saw, without exception, showed a slight pinkish discoloration of the neck, as if a blood-stain had been washed out, usually on the left side, and extending downward from the region of the ear.

"They are dull birds, making but little attempt to defend their eggs beyond loudly clattering their bills. The sound thus produced is louder than would be expected, owing to the resonance of the considerable cavity included by the mandibles. It is very like the sound of a tin pan beaten with a stick. I knocked several off with my heavy overcoat twisted up like a rope, and secured their eggs before they recovered sufficiently to approach the nests. They climbed on to the empty nests again, however, and sat as contentedly, to all appearance, as before. I believe that they do not lay a second time. Certainly, the nest robbed December 30 was still empty January 2, although occupied by the old bird; and the whalers, who are very fond of the eggs, assert that they never find a second one in a nest that has been once robbed.

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[1] Bulletin of the United States National Museum, No. 2, 1875.

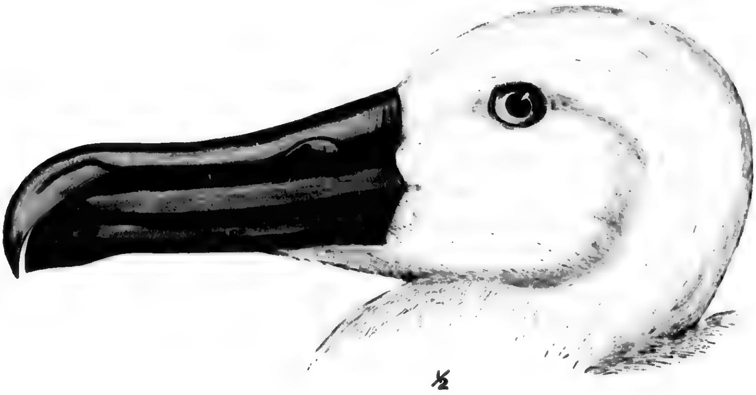
"I have read somewhere that Albatrosses and Penguins nest together, but cannot see how it is possible. The King Penguin is the only one nesting in low land (as I am told); but none were found in this neighborhood. The eggs would be frequently immersed in water, unless raised on similar pedestals to those which the Albatrosses build."

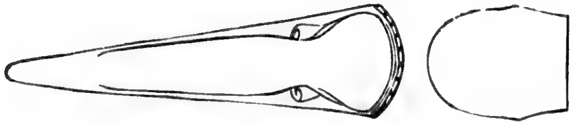
Six eggs obtained by Dr. Kidder, and described by him on page 12 of "Bulletin No. 3 of the United States National Museum," measured 4.80–5.21 inches in length by 3.08–3.25 in width, the larger and smaller circumferences being respectively 12.80–13.80 and 9.60–10.50 inches. They are described as follows: "The shell is white, of loose granular texture, and roughly mammillated surface. There are no markings beneath the superficial calcareous layer, and the spots which appear on this seem to be adventitious stains from the secretions of the oviduct, or accidental soiling after extrusion. Some specimens show a reddish stain upon the larger end, probably dried blood, since it is readily washed off."

Diomedea albatrus.

THE SHORT-TAILED ALBATROSS.

Diomedea albatrus, PALL. Spic. Zool. V. 1769, 28.
Diomedea spadicea, var. B. LATH. Gen. Hist. X. 1824, 52, no. 2, var. B. (cites Pl. Enl. 963).
Diomedea brachiura, TEMM. Pl. Col. 554 (1828), *Adult.*
Diomedea brachyura, LAWR. in Baird's B. N. Am. 1858, 822. — BAIRD, Cat. N. Am. B. 1859, no. 631. — COUES, Pr. Ac. Nat. Sci. Philad. 1866, 177; Key, 1872, 325; Check List, 1873, no. 578; ed. 2, 1882, no. 810. — RIDGW. Nom. N. Am. B. 1881, no. 701.
Diomedea epomophora, LESS. Man. II. 1828, 351.
Diomedea chinensis, TEMMINCK, Man. d'Orn. I. 1820, cx.

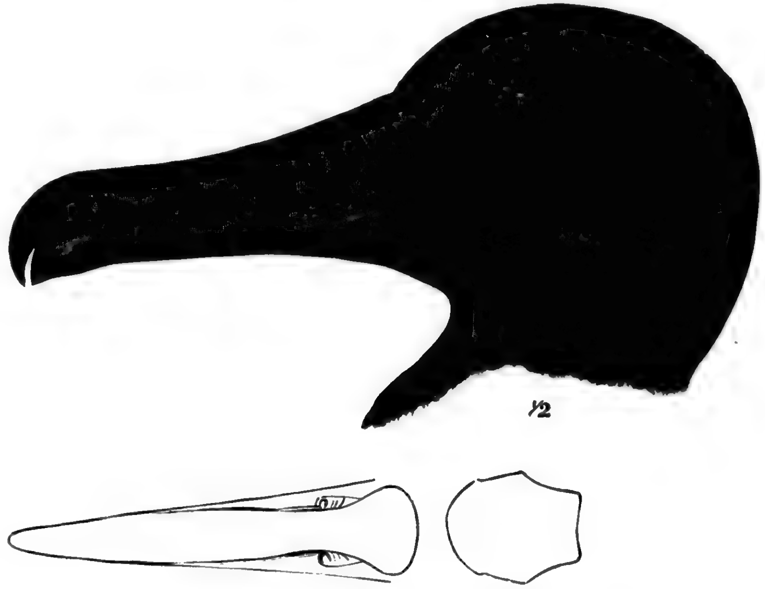




Adult.

Hab. Pacific Ocean, including the western coast of America, especially northward to Aleutian and Prybilof Islands, and Behring's Sea.

Sp. Char. *Adult:* Prevailing color white, the top and sides of the head, with nape, strongly tinged with bright straw-yellow. Longer scapulars, tertials, primaries, and tail-feathers slaty brown, the shafts of the primaries bright straw-yellow; anterior and lower lesser wing-coverts, lower middle and greater coverts, with secondaries, hoary brownish gray. Bill grayish white (in skins), the maxillary unguis more yellowish, the mandible purplish brownish;[1] legs and feet grayish dusky. *Young:* Uniform sooty grayish brown, the pileum and nape darker (nearly black); shafts of primaries bright straw-yellow. Bill pale horn-yellow (in skin); legs and feet grayish brown.



Young.

Total length, about 33.00 inches; extent, 84.00–88.00; wing, 21.00–23.00; culmen, 5.19–5.60; depth of bill through base, 1.95–2.05; tarsus, 3.80–4.00; middle toe, 4.65–4.90.

The Short-tailed Albatross is presumed to inhabit the entire extent of the Pacific Ocean, from the northern coast of America and Asia to Australia, venturing farther north than any other species of its genus. It was ascertained by the naturalists of the Wilkes Expedition to be of frequent occurrence on the coasts of Oregon and California, and is given by Mr. Gould as a bird of Australia. It has been occasionally mistaken for the *D. exulans*, which it resembles, but is smaller, though larger than any of the other species of this genus.

Mr. Peale states that great numbers of this Albatross were observed on the northwest coast of America, and that it was found to vary as much in its coloration as *D. exulans*, and even more than that species, requiring many years to acquire its perfect plumage. Confounding its young with *D. nigripes* — a distinct species — he states that until its second year its plumage remains of a dark sooty brown, and that in this dress it pairs, and raises young. But all this is now supposed to have reference to *D. nigripes* and not to *D. albatrus*. In the course of several years the plumage of the body changes from nearly black to a pure snow-like white.

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[1] "Bill flesh-color, with a faint purplish tinge; hook light horn-color; iris brown" (**Bean**, Proc. U. S. Nat. Mus., Vol. 5, p. 170). Eyelids greenish white (**Gould**).

Mr. Peale adds that birds of this species are usually silent; but that they sometimes quarrel over the offal thrown from the ship, and then they utter a sound like the braying of an ass. They are easily caught with hook and line, but, owing to their thick plumage and tenacity of life, they are with difficulty killed with shot.

On the 20th of December this bird was found breeding on Wake's Island. The single egg of each pair was laid on the ground, in a slight concavity, without any lining. Both sexes take turns in the labors of incubation, and neither the male nor the female parent abandons the vicinity of the nest when approached, but both walk around the intruders in a very dignified manner, making but few attempts to defend themselves, even if taken up. The egg is white, of an oblong shape, with both ends nearly alike; it measures 4.20 inches in length, and 2.60 in breadth. The two sexes are alike in plumage, and do not vary much in size, the male being rather the larger.

Dr. Pickering mentions this species as occurring on the coast of Oregon, and as being particularly abundant at sea north of the Sandwich Islands. Under date of April 10, 1841, he speaks of finding it skimming over the surface of the water, and bending its long wings, but not at so great an angle as is usual among birds. The rate at which it flies is surprising, though at the same time its wings are without perceptible motion. It alights on the water rather awkwardly, and seems to take particular care to adjust its long wings without wetting them. It swims with considerable rapidity.

Dr. Pickering mentions that on the 16th of April (lat. 30° 15′ N.) birds of this species alighted in the wake of the vessel, picking up such substances suitable for food as had been thrown overboard; and that in doing this they uttered faint cries, intermediate in character between the honk of a Goose and the bleating of a sheep. At ordinary times, however, this bird seems for the most part remarkably silent.

Mr. R. Swinhoe, in his remarks on the Formosan ornithology ("Ibis," 1863), speaks of this species as being the large Albatross of the Chinese seas, seen in more or less abundance on every voyage. It goes as far north as Japan. He was not able to discover its breeding-place, though, from its being found at Formosa at all seasons, he suspected the islands on which it nests to be not far from the south coast of China. He was of opinion that the Albatross is never figured correctly while on the wing. When flying, the wings are curved like the head of a pickaxe. It skims the surface, rising and falling with every trough of the sea, with scarcely any perceptible motion of the wings, except at their tips. It often sails upward, and continues in its flight, throwing first one shoulder forward, and then the other. This species is also mentioned by Mr. Swinhoe as having been seen by him at Amoy, China, and again off the Island of Hainan, at sea, where it was noticed on various occasions during his cruise.

Messrs. Blakiston and Pryer mention this bird as being common about Oshima, in Japan, and as present at Yezo, but not so common. The young, which resembles *D. derogata*, is figured in the "Fauna Japonica."

Dr. Cooper, while staying at Monterey, Cal., in May, 1861, noted the near presence to the shore of immature birds of this species. They had been attracted by the whalefishers, and were busily engaged in picking up scraps of blubber in company with *Ossifraga gigantea*. He regards this as being the characteristic species of the North

Pacific Ocean, and the only one common on the Californian coast, all others being mere stragglers, or found so far from land as to be rarely seen, and hardly belonging to our fauna. He mentions finding young specimens of this Albatross as far south as San Nicolas Island, lat. 33° N., on the 1st of July, but was assured that none breed on any of the more southern islands; and it is very unlikely that they do this on any of those within our limits. These birds had apparently followed some vessel from the far north. They were extremely familiar, alighting within a few yards of his craft, and evidently expecting to be fed, as they followed the vessel for some distance, and caught at the pieces of meat thrown to them. They are often taken with a hook when following vessels along the coast, especially when young. He saw it off Monterey in April; but whether it leaves the coast entirely between that month and July he cannot state with certainty, but presumes that the few birds noticed at that time are immature or unmated. Of the old birds in the white plumage he met with but a single specimen, and that was found dead on the beach at San Diego. This species very rarely shows itself within sight of land.

Dr. Cooper also mentions that at San Diego he saw none of these birds until about December 15, when the whale-fishery commenced. They usually kept outside of the bay; but in stormy weather came a short distance in, sailing rapidly about over the surface, in an oblique position, in search of scraps, and if they found a quantity near together, settling down and swimming about after them. At such times he found no difficulty in approaching the birds in a skiff, and one morning he shot two on the water very near together. Though killed instantly, they disgorged the oily contents of their stomachs, as they do when taken alive. He has seen seven or eight together near the mouth of the bay, all in the sooty plumage. One of the three obtained was a female, and did not differ in size from the largest male. When caught with a hook, as it follows a vessel, and taken on board, this bird is unable to rise from the deck, as it requires a long range of surface on which to flap its wings.

Mr. H. W. Elliott states that the Short-tailed Albatross was often seen about the Prybilof Islands some twenty or thirty years ago, when whaling vessels were reaping their rich harvests in the Behring and Arctic seas, thus affording the birds an opportunity to feed upon any refuse of the whales which might drift on shore. With the decrease of the fishery, the Albatross has almost entirely disappeared; and only a single individual was seen by Mr. Elliott during his two years' residence in that locality. This bird is common around Unalashka Island, where he saw a large number on his way to San Francisco, in August, 1873.

Mr. Dall speaks of this species as being very abundant off shore throughout the Aleutian Islands, where it takes the place of *D. nigripes*, which seldom ventures north of lat. 50° N. It probably breeds in the islands, as he saw the remains of a young bird at Atka. Its bones were abundant in the ancient Aleutian shell-heaps. It is much larger than *D. nigripes*, and is apparently a resident in the Aleutian Islands from Atka eastward.

An egg of this species (Smithsonian Institution, No. 949 — taken by Mr. Titian R. Peale in the Pacific islands) is of an oval shape, with rounded ends, and of a dull white color, measuring 4.00 inches in length by 2.60 in breadth.

Diomedea nigripes.

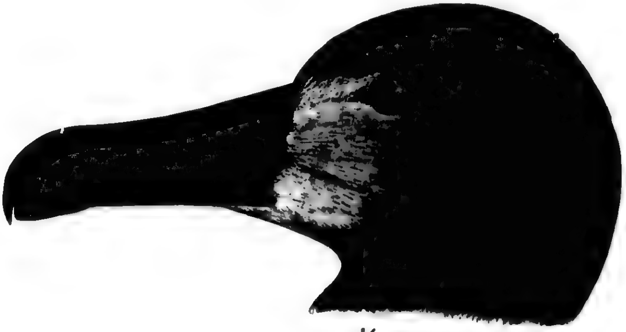
THE BLACK-FOOTED ALBATROSS.

Diomedea nigripes, AUD. Orn. Biog. V. 1839, 327; B. Am. VII. 1842, 198. — CASS. Illustr. B. Cal. Tex. etc. 1853, 210, pl. 35. — COUES, Pr. Ac. Nat. Sci. Philad. 1866, 178; Key, 1872, 326; Check List, 1873, no. 579; ed. 2, 1882, no. 811. — RIDGW. Nom. N. Am. B. 1881, no. 700.

Diomedea brachyura (supposed young), CASS. Illustr. B. Cal. Tex. etc. 1853, 291. — LAWR. in Baird's B. N. Am. 1858, 822.

HAB. North Pacific Ocean, including the west coast of North America.

SP. CHAR. *Adult:* Above, brownish dusky, the scapulars indistinctly margined terminally with paler; primaries nearly black, their shafts clear straw-yellow; upper tail-coverts and concealed base of the tail white. Anterior portion of the head and auricular region dirty whitish, shading gradually into brownish gray, except behind the eyes, where very abruptly defined against the blackish dusky of the sides of the occiput; lower parts fuliginous-gray, deepest on the neck, sides, and flanks, fading gradually into white on the crissum and middle portion of the abdomen. Bill dusky purplish brown; legs and feet black.[1] *Young:* Similar, but head darker, showing whitish only against the base of the bill. the lower parts entirely uniform smoky gray (darker than in the adult), the upper tail-coverts dusky, like the rump.



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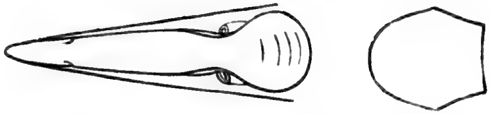

Adult.

Total length, 28.50–32.50 inches; extent, 79.50; wing, 18.50–21.50; culmen, 3.75–4.31; depth of bill at base, 1.45–1.60; tarsus, 3.50–3.70; middle toe, 4.05–4.40.

This species was first described by Audubon from a specimen obtained by Mr. Townsend, Dec. 25, 1834, on the Pacific Ocean, in latitude 50°. Nothing was then known in regard to its habits, and it was supposed by Mr. Cassin to be an immature specimen of *D. albatrus;* but the young of the latter species, though somewhat similar in plumage, is very distinct in form and dimensions.

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[1] "Iris umber; tarsus, foot, base and tip of bill, black; remainder of bill plumbeous;" of another specimen, "iris umber or golden brown" (BEAN, Proc. U. S. Nat. Mus. Vol. 5. pp. 169, 170).

Mr. Dall speaks of this bird as being very common in the North Pacific, and as accompanying the ships for weeks. It is not found in Behring's Sea; but as soon as the party had passed the islands, coming south, their vessel was several times joined and followed to San Francisco by a company of this species. They were generally dusky; but the old males had more or less white on the head. They are described as very greedy, swallowing all sorts of scraps thrown overboard; and fishing for them with a hook and line baited with pork, is a favorite amusement for the passengers when becalmed. With the exception of the small Petrels, these were the only birds met with off soundings in the North Pacific. They will follow a ship for hundreds of miles, and will feed upon all manner of refuse. They are indefatigable on the wing; but are dirty, ugly, awkward, and cruel to wounded birds of their kind. They have an angry note, which is only uttered when some more fortunate bird has secured the coveted morsel; and a croaking whine, in which they give vent to their apprehensions just before a storm. This bird hardly ever flies at a greater height than fifty feet above the water, and usually keeps about thirty feet above it. It rises by unfolding its wings and running a few steps in the water, and then a few strokes send it into the air. On a rough day it rises quickly, but always in the same manner; while in a dead calm it often has to run ten or twenty feet before getting out of the water; and it cannot rise at all from the deck of a vessel. Its wings are long, and the movement in unfolding them is similar to that made in opening a carpenter's rule. In rising or falling, the wings are kept perfectly stiff; and they are folded only when the bird is settled in the water. When half folded they form a triangular arch over the back, and present a very awkward appearance.

This bird remains in the air sometimes for five minutes without moving its wings in flight, although it does not always continue at the same height, but slides from side to side, like a sheet of paper falling slowly. It has two ways of alighting — one is to fly against the wind, with the wings stiff and extended, and the feet spread and stuck out in front, and going into the water at an angle very obtuse, the outspread web-feet soon checking its speed. The other way is to stretch out the legs stiff and at full length behind, and to tip over into the water backward on its posteriors — exactly as if, while preparing to sit down, some one had pulled the chair away. This bird rests very calmly on the water when once settled, and swims slowly and laboriously. Mr. Dall has never seen it nearer land than the Farallones, and supposes that it breeds on the rocky islets off the northern coast. The entire absence of birds of all kinds, except only Petrels, from the eastern portion of the North Pacific Ocean, is a fact quite remarkable.

Mr. Dall, in his paper on the Eastern Aleutian Islands, remarks in regard to the flight of this species, that its ordinary method of support, when there was a breeze, consisted in rising against the wind and falling with it; this being sometimes kept up for hours with hardly a stroke of the wings. It rises only against the wind, except in rare cases, when its descending momentum is sufficient to raise it slightly for a short distance, or when the reflex eddy from the high surge is strong enough to give it a slight lift. It uses its strong webbed feet to some extent in balancing itself when turning with the wind; also, by extending them downward at a right angle with the body, to check its course, especially when alighting on the water. Generally, when flying, the feet are stretched out behind, with the webs extended, and assist the bird materially in guiding itself, the tail being shorter than the extended feet. It rises by running against the wind over the water, until sufficiently raised above the surface to use its wings without wetting them. Its eyesight is exceedingly acute; it can distinguish a discolored spot in the water a yard in diameter from a distance of at least five miles, and even much farther than our unaided eyes can see the bird itself. Its flight, in calm weather, consists of a series of five or six short, sharp strokes, made at intervals of a second, or more, apart, followed by a short period of comparative quiet. It appears to subsist mainly on a pelagic crab and the refuse from vessels. It usually flies in flocks of six or eight, but often smaller; and on one occasion a solitary individual followed the vessel for hundreds of miles without a companion.

Mr. Dall, in his Notes on the Avifauna of the Aleutian Islands west of Unalashka, referring to the question as to where this species breeds, states, on the authority of Mr. George Holder, that it nests on the coral island of Gaspar Rico, near the equator, in the winter season. This gentleman, who is said to be an intelligent and trustworthy observer, informed Mr. Dall that, on a voyage in quest of new guano islands, he touched at Gaspar Rico, and found this bird, together with a species of Petrel, and a Tern, breeding abundantly in a low scrubby growth of bushes, which are the only representatives of trees on that island. His impression was that it laid but one moderately-sized white egg in a depression in the soil, around which a little sea-weed or dry herbage was gathered. It is not known to breed anywhere on the northwest coast of America, or on the northern Pacific islands.

Diomedea melanophrys.

THE SPECTACLED ALBATROSS.

Diomedea melanophrys, "BOIE," TEMM. Pl. Col. no. 456 (1838). — GOULD, Birds Australia, VII. pl. 43. — COUES, Proc. Philad. Acad. 1866, 181. — BEAN, Proc. U. S. Nat. Mus. Vol. 5, 1882, 170 (off coast of California, long. 142° 23′ W., lat. 40° 30′ N.).

HAB. Southern oceans generally, north to at least 40° 30′ north latitude, and east nearly to coast of California (BEAN, l. c.).

SP. CHAR. *Adult:* Back and scapulars brownish slate, becoming more ashy anteriorly; wings uniform dark brownish slate; tail brownish gray, the shafts of the feathers yellowish white; shafts of primaries deep yellow basally, dark brownish terminally. Head, neck, rump, upper tail-coverts, and entire lower parts white; an indistinct grayish stripe through eye, darkest immediately before and behind the eye. Bill yellowish, the ungui and base of culmen tinged with horn-color;[1] legs and feet "pearly slate" (light brownish in dried skin). Wing, 19.50–20.00 inches; tail, 8.00–8.50; tarsus, 3.00–3.25; middle toe, 4.00–4.30; culmen, 4.30–4.70.

GENUS **THALASSOGERON**, RIDGWAY.

Thalassiarche, FORBES, Zool. Challenger Exp. IV. 1882, 57 (not *Thalassarche*, REICH. 1852).
Thalassogeron, RIDGW. MS. (type, *Diomedea culminata*, GOULD).

CHAR. Similar to *Diomedea*, but culminicorn widely separated from the latericorn by the interposition of a strip of naked skin behind the nostril. Bill much compressed.

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[1] "No difference whatever is observable in the plumage of the sexes, neither is there any visible variation in this respect between youth and maturity; a never-failing mark, however, exists, by which these latter may be distinguished — the young bird has the bill dark brown, while in the adult that organ is of a bright buffy yellow; and individuals in the same flight may frequently be seen in which the bill varies from dark horn-brown to the most delicate yellow" (GOULD, Birds of Australia, pt. vii.).

A male from Valparaiso, Chili, had the "bill gray, with dark tips; feet light gray; iris dark brown" (SHARPE, P. Z. S. 1881, p. 12).

Thalassogeron culminatus.

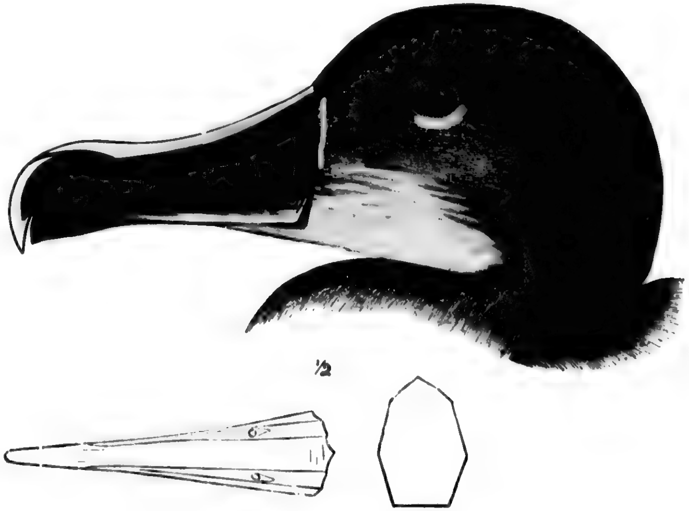
THE YELLOW-NOSED ALBATROSS.

Diomedea culminata, GOULD, P. Z. S. July 25, 1843, 107; Birds Austral. VII. pl. 41. — GRAY, Gen. B. 1849, pl. 179. — COUES, Pr. Philad. Acad. 1866, 183. — STREETS, Bull. U. S. Nat. Mus. no. 7, 1877, 31. — RIDGW. Nom. N. Am. B. 1881, no. 702.

Diomedea chlororhynchos, AUD. Orn. Biog. V. 1839, 326; B. Am. VII. 1844, 196. — LAWR. in Baird's B. N. Am. 1858, 822 (excl. syn.). — BAIRD, Cat. N. Am. B. 1859, no. 632.

HAB. "Southern, Indian, and South Pacific Oceans" (GOULD, l. c.); casual off the coast of Oregon (AUDUBON).

SP. CHAR. *Adult:* Head and neck light ash-gray, darker immediately in front of the eyes, paler on the throat, and fading into white on the lower surface of the body; lower eyelid white. Back brownish plumbeous, fading gradually into the light ashy of the nape, growing gradually darker toward the scapulars, which, with the entire wings, are uniform dark brownish slate, or dusky; rump and upper tail-coverts white; tail hoary slate-gray, the shafts yellowish white. Shafts of primaries straw-yellow, changing to brown terminally. Bill grayish black, the culmen (abruptly) and the lower part of the mandible yellowish white; legs and feet dull brownish.[1] *Young:* "Head and neck dark gray;" the bill "almost uniform brownish black, with only an indication of the lighter color of the culmen" (GOULD).



Adult.

Wing, 21.00 inches; culmen, 4.50; depth of bill at base, 1.75; tarsus, 3.25; middle toe, 5.00.

The individual described by Audubon as the Yellow-nosed Albatross (*D. chlororhynchos*), and said to have been procured by Mr. Townsend near the mouth of the

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[1] "Bill black, the culmen horn-color, and the edge of the basal two thirds of the under mandible orange" (GOULD, Birds of Australia, pt. vii.).

"Bill black, with the ridge in its entire length and breadth, the tip of the upper mandible, and the crura of the lower along their inferior edges yellow. Feet yellow, claws yellowish gray" (AUDUBON).

Columbia River, has been ascertained by Professor Baird to belong, not to that, but to the present species. It is exceedingly problematical whether this bird is really entitled to a place in the avifauna of North America. In regard to its history and distribution generally I have no information.

Dr. Cooper expresses his conviction that this is a rare visitant on the Pacific coast north of the equator, though said to have been obtained in 1836 off the mouth of the Columbia River by Mr. Townsend. Dr. Cooper has, however, seen a skull answering to the description of that of this species in the collection of the Academy of Natural Sciences in San Francisco. It was taken by Dr. W. O. Ayres from a dead specimen found on the outer beach near the Golden Gate.

GENUS **PHŒBETRIA**, REICHENBACH.

Phœbetria, REICHENB. Syst. Av. 1852, p. v (type, *Diomedea fuliginosa*, GMEL.).

CHAR. Similar to *Thalassogeron*, but bill much more compressed, with sharper culmen, and a deep longitudinal sulcus or groove along the side of the lower mandible; base of the culmen forming a deep angle into the feathering of the forehead, and feathers of the malar region extending forward as an acute angle on the lateral base of the mandible; tail lengthened, cuneate.

Only one species of this genus is known, this (*P. fuliginosa*) ranging over the greater part of the Pacific and Southern oceans.

Phœbetria fuliginosa.

THE SOOTY ALBATROSS.

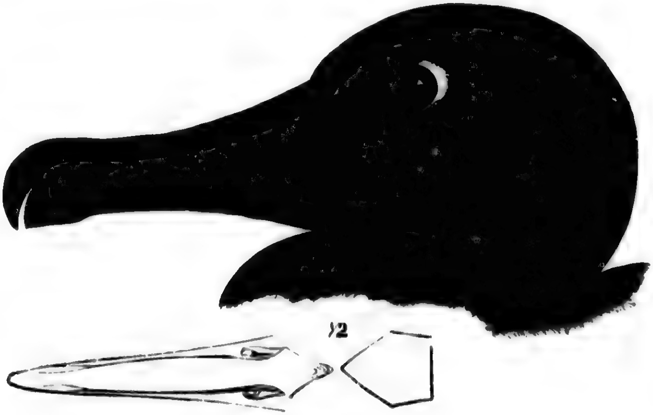
Diomedea fuliginosa, GMEL. S. N. I. ii. 1788, 568. — TEMM. Pl. Col. 469. — LAWR. in Baird's B. N. Am. 1858, 823. — BAIRD, Cat. N. Am. B. 1859, no. 633. — COUES, Key, 1872, 326; Check List, 1873, no. 580.

Diomedea (*Phœbetria*) *fuliginosa*, BONAP. Consp. II. 1855, 186.

Phœbetria fuliginosa, COUES, Pr. Ac. Nat. Sci. Philad. 1866, 186; 2d Check List, 1882, no. 812. — RIDGW. Nom. N. Am. B. 1881, 703.

Diomedea palpebrata, FORST. "ic. ined. no. 102."

Diomedea fusca, AUD. Orn. Biog. V. 1839, 116; B. Am. VII. 1844, 200, pl. 444.



Adult.

HAB. Oceans of the southern hemisphere, northeastward to the coast of Oregon. (AUDUBON.)

SP. CHAR. *Adult* (?): Neck, back, and entire lower parts pale smoky ash, lightest on the neck and anterior portion of the back, where the tips of the feathers are nearly white; pileum clouded with pale yellowish ash and dusky; sides of the head, including lores, orbital and malar regions, chin, and throat, deep fuliginous, darkest around the eyes, where nearly black. Eyelids whitish. Wings and tail dark slaty fuliginous, the shafts of the primaries and rectrices yellowish, except terminally; scapulars and rump intermediate in color between the wings and back. Bill black, except the sulci, which are light colored; legs and feet pale reddish. *Young:* Entire head deep fuliginous, fading gradually into the uniform smoky gray of the lower surface of the body, the back, rump, and upper tail-coverts; scapulars sooty gray, considerably darker than the back; wings and tail sooty slate, the inner lesser coverts faintly tipped with dull ferruginous, the shafts of the primaries and rectrices yellowish white. Eyelids conspicuously white, except anteriorly. Bill and feet colored as in the adult.

Wing, 20.00–21.50 inches; tail, 10.50–13.00, the lateral feathers 3.00–5.50 shorter; culmen, 4.00–4.25; depth of bill at base, 1.40–1.55; tarsus, 3.25; middle toe, 4.00–4.50.

This species was introduced into the North American fauna by Audubon, who figured and described it as *D. fusca* — supposing it to be a new species — from an individual procured by Dr. Townsend near the mouth of the Columbia River. It is a bird of the Pacific Ocean, a great wanderer, more common in the South than in the North Pacific Regions, and with very doubtful claims to be regarded as even a visitor of the North American coast at any point.

Mr. R. Swinhoe speaks of it as being abundant at all seasons in the Formosan Channel. He kept several birds of this species, as well as of *D. albatrus*, alive for several days in his veranda at Amoy; but he could not induce any of them to feed. For a few days they walked about in a clumsy manner, but soon became too weak. He kept one alive, in order to ascertain how long it was possible for this bird to exist without food. It had been kept a week or more when he received it, and it remained alive twenty-nine days after that; so that it must have lived in all at least five weeks without swallowing anything.

It was also found about Amoy, China, where it was caught, in company with *D. albatrus*, by the fishermen, and brought into the market for sale — the flesh, all musk-flavored as it is, being devoured by the omnivorous Chinamen. There it goes by the name of *A-haieau-gong*, or Booby of Hainan.

Mr. Layard met with it in the Antarctic Ocean, in lat. 41° S. It was in company with *Ossifraga gigantea*. The same gentleman, in the "Ibis" (1867), describes an egg that had been obtained by Captain Armson in the Crozette Islands. It measured 4.20 inches by 2.60, and resembled generally the egg of *D. exulans* — being chalky white, coarse to the touch, and of a squarely truncated form. It was also minutely pitted with reddish dots in an indistinct band at the obtuse end. This species is called the "Blue Bird" by the sealers, who readily distinguish it from the equally sooty Giant Petrel by its white eyelids and the white mark along the bill. The female lays but a single egg, which is said to be very good eating.

Captain P. P. King writes ("Zoologist," XXXIV. 128) that he met with birds of this species in the greatest abundance near the Island of St. Paul. Wherever one species of *Diomedea* abounded, the others were found to be less common; and from this he inferred that the three species, *D. spadicea*, *D. chlororhynchos*, and *P. fuliginosa*, breed in different haunts.

This species is given by Mr. G. R. Gray as one of the birds found on the coast of New Zealand.

Captain Hutton ("Ibis," 1865) states, on the authority of Mr. Richard Harris, R. N., that this species breeds in the inaccessible cliffs of the Prince Edward Islands and Kerguelen Island — where, however, he was never able to secure a nest. This bird had an unpleasant habit of screeching at night, and was called by the sealers the *Pee-u*. Sir John Ross mentions seeing young birds of this species, fully fledged and ready to go to sea, in May, at Kerguelen Island. This Albatross was so very shy that Mr. Harris was not able to make any observations as to its habits. It is described by Mr. Gould as being very wary, seldom caught, and the only one of all the Petrel tribe which is wont to fly directly over a ship.

The unrivalled flight of the Albatross has been the admiration of voyagers from the earliest time; and this species, as Captain Hutton contends, carries off the palm from all its competitors. "Never," he states, "have I seen anything to equal the ease and grace of this bird as it sweeps past, often within a few yards, every part of its body perfectly motionless, except the head and eye, which turns slowly, and seems to take notice of everything. I have sometimes watched narrowly one of these birds sailing and wheeling about in all directions for more than an hour, without seeing the slightest movement of its wings."

In a subsequent voyage, in 1866, from London to New Zealand, as Captain Hutton again states, he saw a large number around the ship on the 8th of April, and also when off the Island of Tristan d'Acunha. After that he met with none until the 28th, in latitude 38°; but from that time forward they continued to be seen until the 20th of May.

Dr. J. H. Kidder, in his Notes on the Birds of Kerguelen Island, mentions the capture of two specimens of the Sooty Albatross, October 16, at the entrance of a shallow cave in the face of a rock some distance inland. The birds kept about the huts several days, showing no disposition to escape; but very unexpectedly one of them walked to the edge of a rock and flew off. October 24, two had been found to have made a nest on a shelf formed by a considerable tuft of cabbage and azarella at the entrance of a small cavity in the perpendicular face of a lofty rock, some two miles distant. Their screams were very loud, and not unlike the call of a cat. The name of *Pee-aw* has been given it as descriptive of this call, which is presumed to be peculiar to the breeding-season. November 2, an egg and both parents were secured. The nest was a conical mound, seven or eight inches high, hollowed into a cup at the top, and rudely lined with grass. The male was sitting on the egg when captured, and the female standing on an old nest not far away. Both — especially the male — showed fight when approached, clattering their large bills with an odd noise, and biting viciously. In captivity both birds ate freely of fresh meat. The egg was single, white, and very long in proportion to its thickness. Other eggs were met with as late as November 21.

In Dr. Kidder's Notes on the Oology of Kerguelen, he describes the eggs of this species as being broadly ovoidal, generally white, and marked by a collection of spots about the larger end. The shell is said to be compact in structure, thin for its size, and smooth to the touch. Examined by the lens, it is found to be marked by minute pits and linear depressions. Both eggs measured 3.95 inches in length, and one 2.60, the other 2.64, in breadth.

FAMILY PROCELLARIIDÆ. — THE PETRELS.

The North American genera of this family are numerous, and may be distinguished as follows: —

PROCELLARIINÆ. Secondaries 13 or more; tarsi covered with small hexagonal scutellæ; claws sharp, curved, more or less compressed. Leg-bones shorter than wing-bones; cervico-dorsal vertebræ not less than 22; basal phalanx of middle toe shorter than the next two joints, together.

A. Size very large (wing, 17.00 inches or more). Bill longer than tarsus.

3. **Ossifraga.** Tail of sixteen feathers; bill longer than the tarsus, very stout; nasal tube much longer than the maxillary unguis, the nasal orifice single at the entrance, the septum being hidden.

B. Size medium (wing less than 14.00 inches, and more than 7.00). Bill shorter than tarsus.

4. **Fulmarus.** Tail of twelve to fourteen feathers; bill very stout; nasal tube much shorter than the unguis, straight on top; maxillary unguis separated from the nasal tube by a very narrow space.
5. **Priocella.** Similar to *Fulmarus*, but bill much more slender, the nasal tube concave on top, and separated from the unguis by a very wide space.
6. **Priofinus.** Tail-feathers twelve; nasal tubes about half as long as the unguis, and separated from the latter by a space equal in length to about two thirds the length of the unguis; nostrils opening directly anteriorly.
7. **Puffinus.** Tail-feathers twelve; nasal tubes about half as long as the unguis, and separated from the latter by a space nearly equal to the length of the unguis; nostrils opening obliquely upward.
8. **Œstrelata.** Bill much compressed and very deep, the ungui very large, occupying nearly the terminal half of the bill; nasal tubes short and very prominent, about one third to one half as long as the maxillary unguis, the nostrils opening directly in front.
9. **Bulweria.** Similar to *Œstrelata*, but smaller and more slender, the tail longer (about half the wing) and more graduated. Myological formula said to be very different.
10. **Daption.** Tail of fourteen feathers; bill broad and depressed, except terminally, the unguis occupying less than one third its length; nasal tubes depressed and concave in the middle, nearly as long as the unguis, and separated from the latter by a space equal to about two thirds its length; maxillary rami separated below from the angle back, bowed slightly outward, the intervening space occupied with bare skin; tarsus much longer than the bill, but shorter than the middle toe.

C. Size very small (wing less than 7.00 inches).

11. **Halocyptena.** Tail much rounded, or slightly graduated; tarsus decidedly longer than the middle claw (about twice the culmen); no white on the rump.
12. **Procellaria.** Tail even or slightly rounded; tarsus about equal to the middle toe and claw (about twice the culmen); a white patch on the rump.
13. **Cymochorea.** Tail much forked; tarsus about as long as, or a little shorter than, the middle toe and claw (about one and a half times as long as the culmen); with or without a white rump patch.
14. **Oceanodroma.** Tail forked, the feathers scalloped at the end, the lateral rectrices narrowed terminally; tarsus about equal to, or very little shorter than, the middle toe and claw (not quite twice as long as the culmen); no white on the rump.

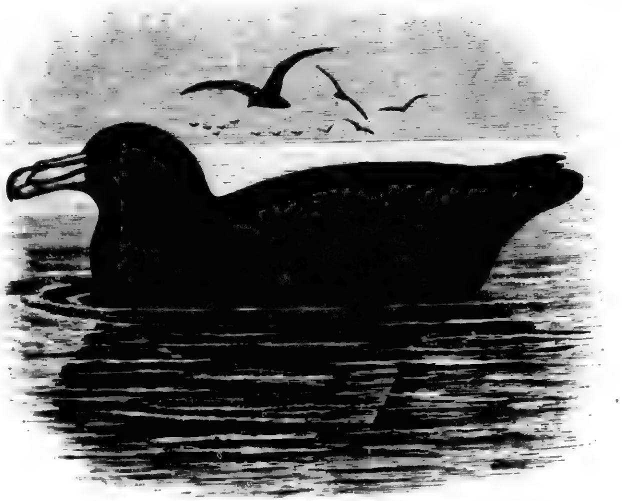
OCEANITINÆ. Secondaries 10; tarsi ocreate, or else covered in front with large obliquely transverse scutes; claws flat and broad. Leg-bones longer than wing-bones; cervico-dorsal vertebræ 21; basal phalanx of middle toe longer than the next two together. Nasal aperture single, circular

15. **Oceanites.** Tail forked, the feathers broad and nearly truncate at the end; tarsus much longer than the middle toe and claw (about two and a half times the length of the culmen); a white rump patch.
16. **Cymodroma** (*gen. nov.*). Tail even, the feathers exceedingly broad, with truncated tips; tarsus about twice as long as the middle toe without the claw (more than two and a half times as long as the culmen).

GENUS **OSSIFRAGA**, HOMBRON & JACQUINOT.

Ossifraga, HOMB. & JACQ. Compt. Rend. XVIII. 1844, 356 (type, *Procellaria gigantea*, GMEL.).

CHAR. Size very large (equal to the smaller *Diomedeæ*); bill very robust, longer than the tarsus; nasal tubes very large and long, occupying the greater part of the culmen, the external orifice of the nostrils simple, the septum commencing far back. Tail-feathers 16.



O. gigantea, dark phase.

Only a single species of this genus is known. It much resembles in size and general appearance the smaller Albatrosses, but may be at once distinguished by the very different form of the bill.

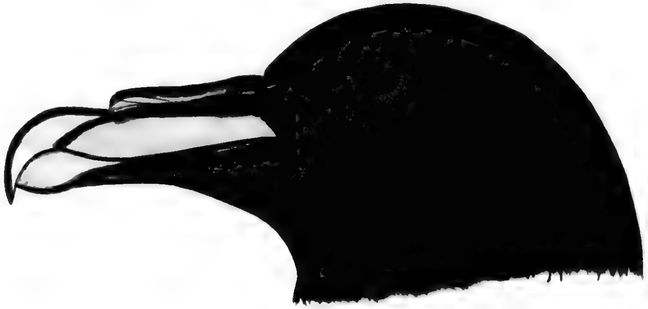
Ossifraga gigantea.

THE GIANT FULMAR.

Procellaria gigantea, GMEL. S. N. I. ii. 1788, 563. — NUTT. Man. II. 1834, 329. — AUD. Orn. Biog. V. 1849, 330; B. Am. VII. 1844, 202. — LAWR. in Baird's B. N. Am. 1858, 825. — BAIRD, Cat. N. Am. B. 1859, no. 634.
Ossifraga gigantea, REICHENB. Syst. Av. 185, pl. 20, fig. 332. — BONAP. Consp. II. 1856, 186. — COUES, Pr. Ac. Nat. Sci. Phil. 1866, 32; 2d Check List, 1882, no. 813. — RIDGW. Nom. N. Am. B. 1881, no. 704.
Fulmarus giganteus, COUES, Key, 1872, 327; Check List, 1873, no. 581.
? *Procellaria brasiliana*, LATH. Ind. Orn. II. 1790, 821, no. 2.

Hab. Southern oceans; casual off the coast of Oregon.

Sp. Char. *Adult:* Head, neck, and lower parts, white;[1] upper parts plain fuliginous-slate, the feathers, particularly the scapulars, sometimes indistinctly tipped with lighter. Bill yellow; legs and feet yellowish or dusky. *Young?:* Uniform dark fuliginous-slate, sometimes with whitish feathers around base of the bill. Bill more olivaceous.[2]



Dark phase.

Total length, about 3 feet; extent, about 7; wing, 17.00 to 21.00 inches; culmen, 3.50–4.00; tarsus, 3.50; middle toe, without claw, 4.50–4.70.

Audubon states that a specimen of this enormous Petrel was shot at some distance from the mouth of Columbia River, and sent to him by Mr. Townsend. Its great size gave to it, at first sight, the appearance of an Albatross. By some sailors it is said to be known by the name of "Mother Carey's Goose." In the Report of the Wilkes Expedition it is spoken of as the "Giant Petrel." It was frequently observed during the voyage of that Expedition, and its claim to be regarded as one of the birds of North America is confirmed by the collection of specimens on the coast of Oregon. Since this species is much larger than its immediate relatives in this group, it would seem as if it was more nearly allied to the Albatrosses than to the Fulmars. So far, however, as its manners and habits are known, they vary but little from those of the Fulmars.

The occurrence of this bird is frequently referred to by Dr. Pickering in his Journal of the Events of the United States Exploring Expedition. On the morning of Feb. 13, 1839, an example of this large Fulmar was captured; but the locality is not given. He states that an individual of this species had been seen occasionally since the 15th of January, when the Expedition was in latitude 39° 5′, in the Atlantic Ocean; but at first it was mistaken for an Albatross. In size it was equal to a Goose, its total length being two feet, five inches, and its expanse of wing six feet. Its iris was lake-brown. It was captured alive; and when placed on deck, could run or stand for a few moments without expanding its wings, but was apparently very soon fatigued with such exertion, and almost immediately assumed a sitting position, like that of *Thalassidromæ*. Its wings were, like those of an Albatross, long and narrow, and in flying were extended almost in a straight line, at right angles from the body. Its flight was chiefly sailing, which, though long continued, was performed with great rapidity and apparent ease. The bird was called a "Molly-Mawk" by the seamen, some of whom recognized in it an old acquaintance. It was frequently seen alighting and resting on the water.

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[1] According to Dr. Coues (see Pr. Philad. Acad. 1866, p. 32) some specimens are "pure white all over, even to the wings and tail; the continuity of the white only interrupted by a few isolated brown feathers sparsely scattered at irregular intervals over the body."

[2] Audubon describes the bill and feet of a specimen in the uniform dark-brown plumage as yellow; while a male (age not stated) from Tom Bay, Patagonia, is thus described by Mr. Sharpe (Proc. Zool. Soc. Lond., 1881, p. 11): "Bill light gray; iris dark brown; eyelids black; legs and feet dark gray."

Dr. Cooper mentions ("Am. Nat." X. 758) having observed this enormous Petrel — known to whalers as the "Gong" — off the coast, at Monterey, Cal. The whale-fishery had attracted it nearer the land than was usual, and it could be seen swimming lazily near the try-works, in order to pick up scraps of blubber. According to his experience, it usually keeps very far from land, as he has never seen any bird answering its description nearer to the Californian coast, though Steller refers to it as having been seen by him in great numbers feeding on a dead whale, two hundred versts from the land off the northwest coast.

Captain Sperling speaks of the Giant Petrel as not uncommon from the Cape of Good Hope as far south as latitude 27°; beyond that he saw no more of it. At night, when hovering over the ship, this bird would emit the most diabolical cry — between a croak and a scream — often startling the sailors, who could hardly imagine to what cause these sounds were to be attributed.

Captain C. C. Abbott mentions finding this species common along the shores of the East Falkland Islands. It was generally seen on the wing, though occasionally it was resting on the water. He was told that it breeds on many of the adjacent islets; and as a proof of the correctness of the statement, he mentions that the eggs were frequently brought to him.

This species is included by Mr. G. R. Gray in his list of the birds of New Zealand and of the adjacent islands.

Captain Hutton ("Ibis," 1865) states that it breeds on the cliffs of Prince Edward's Island and of Kerguelen Island, in localities which are not entirely inaccessible. The nestlings are at first covered with a beautiful long light-gray down; and when fledged they are dark brown, mottled with white. When a person approaches the nest, the old birds remain a short distance away, while the young ones squirt a horribly smelling oil out of their nostrils, to a distance of six or eight feet. This Fulmar is remarkable for its voracity, hovering over the sealers when they are cutting up a seal, and devouring the carcase the moment it is abandoned. This bird was known to the sailors as the "Melly." It will occasionally chase the smaller sea-birds, but it is not known ever to kill them; and as these are swift on the wing, it is doubtful if they could be overtaken by this bird. Captain Hutton entirely discredits the statements of Lord Macartney, that this species is in the habit of killing other birds, and then only feeding upon the heart and liver of its victims.

Mr. Layard ("Ibis," 1862) mentions his first meeting with it in the Antarctic Ocean, in latitude 41° S., in company with the Black Albatross — *D. fuliginosa*. Many of this species took the hook freely, when the vessel was not going through the water. They were all unusually lean, and it was presumed that their breeding-season was already over, and that they were feeding their young birds — or this was the only way in which their poor condition could be accounted for.

Mr. Layard afterward ("Ibis," 1867) describes the egg of this species obtained in the Crozette Islands by Captain Armson. It measures 4.25 inches in length by 2.66 in breadth, is of a dirty white, and very rough to the touch, reminding one of the egg of a *Crax*. In shape it is like that of a common Goose, and is rather pointed at each end. It retains the strong musky odor of the parents, which is called

"Glutton Bird" by the sealers, who cannot eat the egg on account of its odor. This bird lays but a single egg. These birds are said to be so fearless that they congregate on the carcasses of the seals that are being cut up, and rival the men in the flensing process.

Dr. Kidder did not meet with any egg of this species, but found the nest on elevated ground, at the distance of half a mile from the sea. When the young were first seen, January 2, there was no vestige of any artificial nest, and the nestlings were nearly fledged, and as large and heavy as the adults. They were found in natural hollows between mounds of *Azorella*. Dr. Kidder describes these birds as being exceedingly filthy, ejecting the contents of their stomachs for two or three feet from their bodies, with an almost unlimited supply from which to draw. When disturbed they soon surrounded themselves with a puddle of vomited matters, among which were noticed many Penguins' feathers. In the same neighborhood was a young bird of an earlier brood, fully fledged, but still unable to fly. These data prove that this Petrel is among the earliest of the birds of Kerguelen in breeding, and that it is destructive of other species of birds. The down of the young bird is entirely gray, and the head is partly naked.

GENUS **FULMARUS**, LEACH.

Fulmarus, LEACH, Stephens' Gen. Zool. XIII. 1825, 233 (type, *Procellaria glacialis*, LINN.).

CHAR. Similar to *Ossifraga*, but much smaller, the bill shorter than the tarsus, the nasal tubes shorter and smaller (decidedly shorter than the maxillary unguis), the nasal septum extending almost to the orifice. Tail-feathers 12-14.

Of this genus there appears to be but a single species, which varies greatly in plumage, even in the same locality.

Fulmarus glacialis.

a. **Glacialis.** THE ARCTIC FULMAR.

Procellaria glacialis, LINN. Faun. Suec. 2d ed. 1761, 51; S. N. I. 1766, 213. — NUTT. Man. II. 1834, 331. — AUD. Orn. Biog. III. 1835, 446; B. Am. VII. 1844, 204, pl. 355. — LAWR. in Baird's B. N. Am. 1858, 825. — BAIRD, Cat. N. Am. B. 1859, no. 635.
Fulmarus glacialis, STEPHENS, Gen. Zool. XIII. 1826, 234, pl. 27. — BONAP. Consp. II. 1856, 187. — COUES, Pr. Ac. Nat. Sci. Philad. 1866, 27; Key, 1872, 327; Check List, 1873, no. 582; ed. 2, 1882, no. 814. — RIDGW. Nom. N. Am. B. 1881, no. 705.
Fulmarus glacialis, a. *Auduboni*, BONAP. Consp. II. 1856, 187.
Fulmarus glacialis, b. *minor*, BONAP. l. c.
Procellaria grönlandica, GUNN. in Lœm. Fenm. Lapp. 1767, 273.
Procellaria minor, KJÆRB. Danm. Fugle, 1052, 324.
Procellaria hiemalis, BREHM, Vög. Deutschl. 1831, 800.

b. **Glupischa.** THE PACIFIC FULMAR.

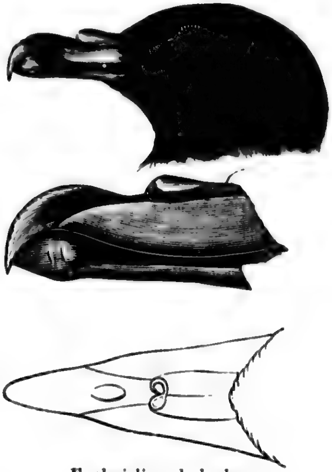
Procellaria pacifica, AUD. Orn. Biog. V. 1839, 331; B. Am. VII. 1844, 208 (not of GMEL. 1788). — LAWR. in Baird's B. N. Am. 1858, 826. — BAIRD, Cat. N. Am. B. 1859, no. 636.
Fulmarus glacialis, c. *pacifica*, BONAP. Consp. II. 1856, 187.
Fulmarus glacialis, var. *pacificus*, COUES, Key, 1872, 327; Check List, 1873, no. 582 *a*.
Fulmarus glacialis pacificus, RIDGW. Proc. U. S. Nat. Mus. II. 1880, 209; Nom. N. Am. B. 1881, no. 705 *a*. — COUES, 2d Check List, 1882, no. 815.
Fulmarus pacificus, COUES, Pr. Ac. Nat. Sci. Philad. 1866, 28.
Fulmarus glacialis glupischa, STEJN. The Auk, I. No. 3, July, 1884, 234.

c. **Rodgersi. RODGERS' FULMAR.**

Fulmarus Rodgersii, CASS. Pr. Ac. Nat. Sci. Philad. 1862, 290. — COUES, ib. 1866, 29. — BAIRD, Trans. Chicago Ac. I. 1869, 323, pl. 34, fig. 1.

Fulmarus glacialis, var. *Rodgersi*, COUES, Key, 1872, 327; Check List, 1873, no. 582 *b*.

Fulmarus glacialis Rodgersi, RIDGW. Pr. U. S. Nat. Mus. Vol. 2, 1880, 209; Nom. N. Am. B. 1881, no. 705 *b*.



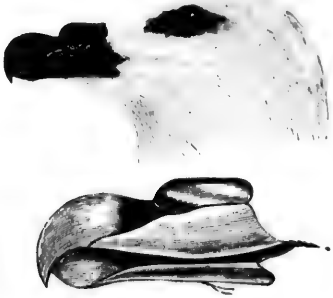
F. glacialis: dark phase.

HAB. True *glacialis*, North Atlantic Ocean, south in America to coast of New England (Massachusetts specimens in U. S. Nat. Mus.); *F. glacialis glupischa*, North Pacific Ocean, south to Western Mexico; *Rodgersi*, restricted to the North Pacific.

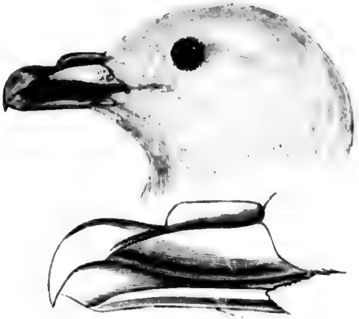
SP. CHAR. *Adult* (?): Head, neck, and lower parts, white; upper surface bluish gray, the primaries darker, the wing-coverts and tertials sometimes partly white. Bill, legs, and feet, greenish yellow; iris yellow. *Young* (?): Uniform cinereous or sooty gray. "Bill dusky brown, blotched and streaked with pale yellowish green; inner side of tarsus, with feet, very pale yellowish white; outer side of tarsus dark brown; iris dark brown" (L. KUMLIEN, MS.).

Total length, about 18.00 to 20.00 inches; wing, 11.80–13.75; culmen, 1.30–1.65; depth of bill through base, .60–.80; tarsus, 1.65–2.15; middle toe, 2.05–2.60.

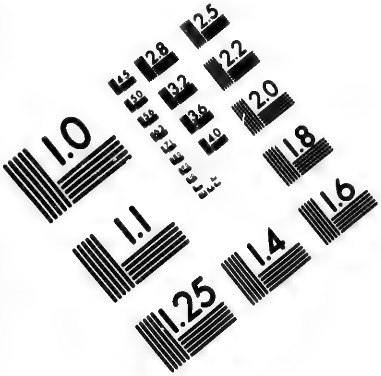
With a considerable series of specimens before us, we are unable to detect constant differences between Fulmars from the North Pacific Ocean and those from the North Atlantic. In fact there is much more of individual than local variation in this species, as regards size and proportions, while the color-variation is also chiefly individual. The few and slight differences in coloration which appear to be at all suggestive of local difference in this respect are as follows: In all stages of plumage, specimens from the North Atlantic are of an appreciably, and in a majority decidedly, more bluish or "pearly" gray than those from the North Pacific, and have, without exception, a dusky space immediately in front of the eye. Not one of the three "adult" specimens shows any white on the wings. In all specimens from the North Pacific the gray is much darker, of a more smoky hue; some have no trace of dusky in front of the eye, while others have a greater or less amount of white on the wing; the type of



F. glacialis: light phase.



F. glacialis Rodgersi.



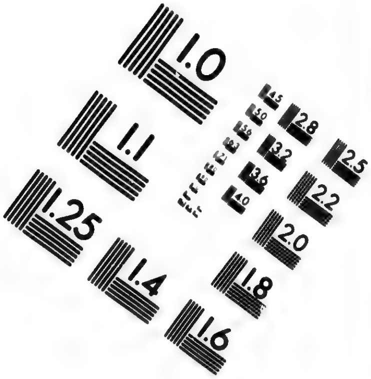
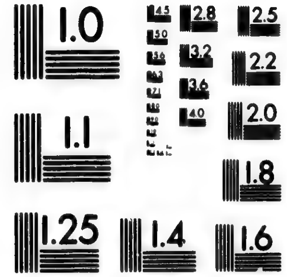
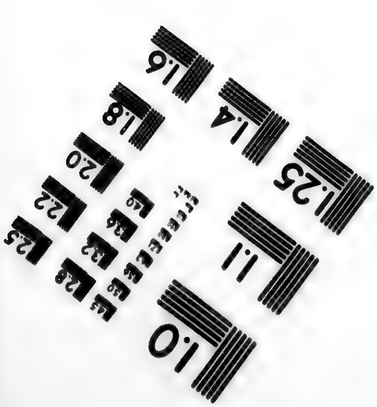
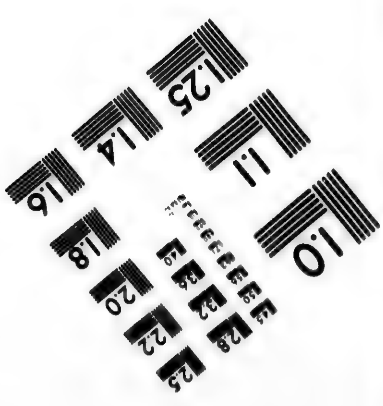
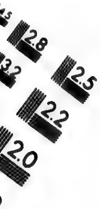


IMAGE EVALUATION TEST TARGET (MT-3)









2.8
3.2
2.5
2.2
2.0

1.0

F. "*Rodgersi*," Cass., having the wing almost entirely white, as are also the rump and upper tail-coverts. There is, however, absolutely no constancy in regard to the continuity of the gray, the shade of which varies from a pale smoky cinereous to a deep, almost slate-, gray. In order to test the question of local *versus* individual variation in size and proportions, careful measurements have been made of the twenty-four specimens examined, and the following summary is presented as the result: —

Seven specimens from the North Atlantic (=*glacialis et* "*minor*").

	Wing.	Culmen.	Depth of bill through base.	Tarsus.	Middle toe.
Maximum,	13.75	1.58	.80	2.15	2.60
Minimum,	11.80	1.30	.60	1.65	2.05
Average,	12.69	1.45	.71	1.88	2.30

Seven specimens from the North Pacific, labelled "*F. Rodgersi.*"

	Wing.	Culmen.	Depth of bill at base.	Tarsus.	Middle toe.
Maximum,	12.90	1.60	.75	2.05	2.50
Minimum,	12.10	1.40	.65	1.75	2.20
Average,	12.46	1.49	.72	1.90	2.32

Seven specimens from the North Pacific, labelled "*F. pacificus.*"

	Wing.	Culmen.	Depth of bill at base.	Tarsus.	Middle toe.
Maximum,	12.35	1.65	.70	2.00	2.35
Minimum,	11.90	1.35	.65	1.75	2.10
Average,	12.06	1.48	.68	1.88	2.25

The greatest variation in size is seen among specimens from the North Atlantic, three of which are so much smaller than all the others, especially in regard to the bill, as almost to suggest specific distinctness. These doubtless represent the *P. minor*, Kjærb.[1]

These three specimens, compared with seven others from various localities in the North Atlantic measure as follows: —

F. glacialis minor.

No.			Wing.	Culmen.	Depth of bill at base.	Tarsus.	Middle toe.
76293,*	Ovifak, Greenland,	Aug. 10,	11.90	1.30	.70	1.90	2.20
76289,*	Cumberland Gulf,	Oct. 13,	11.80	1.30	.60	1.65	2.05
77114,†	Coast New England,		12.00	1.38	.60	1.75	2.15
Average,			11.90	1.38	.63	1.77	2.13

F. glacialis glacialis.

No.			Wing.	Culmen.	Depth of bill at base.	Tarsus.	Middle toe.
71021,	Niantilik, Cumberland Gulf,	Aug. 7,	13.75	1.50	.80		
71022,	" "	" 7,	12.80	1.50	.75		
	" "	" 10,	12.90	1.55	.78	2.15	2.45
71020,	" "	" 10,	12.70	1.45	.75	1.95	2.20
76290,	Quickstep Harbor, "	July 11,	13.40	1.45	.75	1.85	2.45
57136,	Greenland,		13.20	1.58	.75	2.00	2.60
78012,	Lat. 45° 10′, long. 55° 21′ W.,	Mar. 14,	12.50	1.45	.65	1.80	2.30
Average,			13.04	1.50	.75	1.95	2.40

* L. Kumlien. † [U. S. Fish Commission.]

The colors of the small specimens mentioned above are in no way peculiar, except that the bill is darker, or almost blackish.

With a few rare and occasional exceptions, the typical Fulmar, or Fulmar Petrel, as it is more generally called, is a northern and Arctic species, confined to the Northern Atlantic and to the Arctic oceans, to the northern portions of America,

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[1] See Coues, Pr. Philad. Acad. 1866, p. 28.

Europe, and Asia, being best known and probably most numerous in the waters north and northwest of Europe. It is a very abundant species, and yet the localities where it has been ascertained to breed are but few in number.

Messrs. Evans and Sturge met with it in abundance in the waters around Spitzbergen, where they were attracted toward the vessel in a large flock by the carcass of a seal. At first the birds were very timid, only skimming over it, and settling on the water at some distance, to reconnoitre. At last one ventured to alight upon it, and began to feed, but was soon interrupted by the arrival of others, among whom a lively contest ensued for the best positions. By the time they had been left far in the wake of the vessel, they had assembled in a vast crowd. At other times they were seen skimming swiftly over the water, after the manner of a European Kestrel, and as noiselessly as an owl. One of the lofty peaks of the mountains, known as the Alkenfels, that stood out like an immense horn, was literally alive with swarms of Fulmars, Brunnich's Guillemot, Black Guillemots, and Kittiwake Gulls. These had their nests in its inaccessible fastnesses, secure from the depredations of man or beast.

This bird was found abundant all around Spitzbergen, and was also met with at the very northernmost point attained by Parry's Expedition. Dr. Malmgren found it breeding by the thousands on the north side of Brandywine Bay, lat. 80° 24′ N. It was also found breeding, but in smaller numbers, on the Alkenhorn, where Professor Newton obtained its eggs. Dr. Malmgren also found it breeding plentifully on Bear Island. Professor Newton adds, in a note, that the very limited number of breeding-places of the Fulmar forms a curious contrast to the extraordinary abundance of the species. Among the British Islands, St. Kilda is said to be its only place of abode. About the year 1839 it was first found breeding about the Faröe Islands, where it has since much increased, and now occupies several spots in that group of islands. In Iceland it has four or five stations.

Captain Elmes, who visited the breeding-place above referred to — St. Kilda — ("Ibis," 1869) gives a full account of it. Soon after landing he started with some of the best cragsmen for the cliffs at the north side of the island. On reaching the summit of Conachan, the highest point, he came suddenly on a precipice not less than 1220 feet in height. The whole of this immense face of rock was so crowded with birds that the water was seen far below as if through a heavy snow-storm, and the birds, which were flying in front of the cliff, almost obscured the view. All the ledges near the top were covered with short turf, full of holes, in which the Fulmars were sitting on their eggs, with their heads and part of their bodies exposed outside. In some cases they were quite concealed; but generally the soil was too thin for them to make more than a slight excavation. Thousands of Fulmars were flying backward and forward, with a quiet, owl-like flight; and although the air was full of them, hardly one ever came over the top of the cliff.

After admiring the scene for some time the Captain prepared to descend; and on arriving at the first ledge, where the Fulmars were, he had no difficulty in collecting the eggs, which were laid in small holes among the stones, or in the turf on a few bits of grass, or on the stems of the sea-pink, and so slightly built as hardly to suffice to keep the eggs from the bare ground. The birds were very tame, and sometimes allowed themselves to be caught with the hand. The eggs were quite fresh; and all that he took on that part of the cliff were distinctly marked with reddish-brown dots and freckles. All the eggs from other places were spotless.

The young Fulmars, as soon as fledged, are eagerly sought for as food by the St. Kildians; and even the old birds — as Mr. Scoresby states — when cleared of the skin and every particle of fat, are tolerably good eating. He further says that this bird is remarkably light and swift on the wing, and that it can fly to windward in the severest gales, and rest on the water with complete composure in the most tremendous seas. In heavy gales it flies quite low, skimming over the surface of the water.

The Fulmar when caught vomits from its mouth nearly a wine-glassful of clear yellow oil, with minute green particles floating in it, of which oil the St. Kildians collect large quantities. All the birds taken on their nests were females, and their eyes were not yellow, but black or dark brown. The feathers of the breast were unusually thick and close, and there was a bare hollow place on the stomach of the size and shape of the egg.

Mr. Wheelwright states that the Fulmar is not seen on the Swedish coast in summer, but that it is occasionally met with there in winter and in the autumn, and never farther south on the Norwegian coast than Trondhjem. It breeds in the far north, in the islands off Nordland, and Finland; but Iceland appears to be its principal breeding-place. The female lays but one white egg, said to be three inches in length, and two in breadth.

Mr. Gillett saw the Fulmar in the waters around Nova Zembla, where it was a constant attendant on ships in the Arctic Sea, and was easily caught with a baited hook. When placed on deck it was quite unable to rise, or even to stand upright, but shuffled along with the help of its wings. It would, as soon as caught, readily eat blubber; and if thrown overboard would come again to the hook without the least hesitation. This bird never settles on the flat ice; but on one occasion was seen on the sloping side of an iceberg. It was usually either on the wing, or sitting on the water.

Von Heuglin did not find this species anywhere about on the shores of Nova Zembla, but on the high sea he saw it everywhere between that island and the Norwegian coast.

Mr. E. L. Layard mentions meeting with a single example of this species in the Antarctic Ocean, in latitude 44° S. Afterward, on the 16th of September, when sailing along the southern coast of Tasmania, he again saw a single specimen of this bird, which came close under the stern of the vessel, and was several times very nearly taken.

Dr. Walker mentions that, in the voyage of the "Fox," upon approaching the coast of Greenland, the Fulmars first made their appearance, and were thence met with as far as the Expedition sailed. This species is given by Professor Reinhardt as one of the resident birds of Greenland.

These birds were first noticed by Mr. Kumlien off Belle Isle August 20; and from this point northward they increased in numbers, and were seen everywhere, both close in shore and far out to sea, at all times and in all weathers. They were very common in Cumberland until the middle of October, and were especially abundant off the shore at Cape Chidly, Resolution Island, Grinnell Bay, and Frobisher's Straits. On Blue Mountain, Ovifak, Greenland, they were breeding in myriads to its very summit, at the height of two thousand feet. Their abundance near Cape Searle is also spoken of as something extraordinary, and they were so tame about their nesting-places that they could be killed with a stick. In their greediness they are quite equal to Vultures. This Fulmar possesses extraordinary powers of flight, and is very graceful when on the wing.

This is given by Dr. Bessels as being one of the species secured by the "Polaris" Expedition, and Captain Feilden ("Ibis," October, 1877) mentions it as being quite common in the north water of Baffin's Bay; these birds following the ships until they entered the pack off Cape Sabine. On the 26th of June, 1876, on the coast of Grinnell Land (lat. 82° 30′ N.), a single Fulmar was seen; and a few days later another was picked up dead on the shore, some two miles farther north. This species was not again observed until the return of the Expedition to Baffin's Bay in September, 1876.

Mr. George C. Taylor states that, in a voyage from Liverpool to New York, he saw, on the 22d of May, large flocks of these birds near the coast of Newfoundland. Mr. Boardman informs me that the fishermen represent this bird — known to them as the White Hagdon — as being quite common off the coast of Labrador, where it is said to breed.

Neither Mr. Lawrence nor Mr. Giraud mentions this bird as being known in the waters of Long Island or New York; but Audubon cites that region as its southern limit, and in August, on a voyage from England to New York, he procured several examples of this species. They were quite fearless, and floated on the water very buoyantly, some swimming about with great ease. He did not meet with any on the coast of Labrador, though he was told that they are regularly observed in spring to move northward in files opposite the entrance of the Straits of Belle Isle; and Captain Sabine states that while the ships were detained by the ice in Jacob's Bay, latitude 71°, from the 24th of June to the 23d of July, Fulmars were passing in a continual stream to the northward, in numbers inferior only to those seen in the flights of the Passenger Pigeon.

The Fulmar is extremely greedy of the fat of the whale. As soon as the flensing process begins, these birds flock in from all quarters, and sometimes accumulate to the number of several thousands, fearlessly advancing within a few yards of the men employed in cutting up the carcass; even approaching near enough to be knocked down with the boat-hook, or taken alive, and frequently glutting themselves so completely as to be unable to fly.

Mr. Macgillivray describes the egg of the Fulmar as being pure white in color, when clean, and varying in size from 2.63 inches to 3.12 in length by 2.00 inches in its average breadth. On the 30th of June, having descended a nearly perpendicular precipice six hundred feet in height, the whole face of which was covered with nests of the Fulmar, he enjoyed an opportunity of watching its habits. The nests had all been robbed about a month before by the natives, who esteem the eggs of this bird above all others. Many of the nests contained each a young bird a day or two old at farthest, thickly covered with long white down. The young ones were very clamorous on being handled, and vomited a quantity of clear oil, with which he observed the parent birds feeding them by disgorging. The old birds, when taken hold of, vomit a quantity of clear, amber-colored oil, which imparts to the whole bird, its nest, and young, and even to the rock which it frequents, a peculiar and very disagreeable odor. This oil is one of the most valuable productions of St. Kilda.

This bird, called *pacifica*, was described by Mr. Audubon from a specimen obtained by Mr. Townsend on the Pacific coast. It chiefly differed from the common Fulmar in the shape and size of its bill. Dr. Cooper ("Am. Nat." Vol. IV.) met with birds of this species in close proximity to the coast of Monterey, attracted thither by the whale-fishery. They were called by the whalers "Tagers" and "Haglets," were quite common off the shore, and were seen at times feeding on the flesh of the whale, but were more frequently observed chasing the Gulls to make them disgorge. This was in May. A specimen supposed to belong to this species — as Dr. Cooper states — was found by Mr. Lorquin dead on the beach near San Francisco in winter, and is now in the collection of the Academy. Dr. Cooper has since seen many other dead specimens on the beach both there and at San Diego, but not in a condition to be preserved. He has also seen them along the whole southern coast, and at all seasons of the year, but always too far from the land to be shot, and very shy. They very rarely enter bays, and when they do, are so constantly in motion that only by chance do they come within range; and it is useless to pursue them. They are usually seen in chase of the Gulls, obliging the latter to disgorge, when the Fulmars seize the morsel before it reaches the water. Dr. Cooper has also seen this bird picking up scraps in the neighborhood of whale-ships, near San Diego.

Dr. Pickering mentions, in his Journal, that on the 29th of April, 1841, on the coast of Oregon, several specimens were taken with hook and line. They were in an ashy and somewhat mottled plumage, and were all young birds. One set at liberty was quite unable to rise from the deck, and was destitute of the power of standing, though it could run with the aid of its wings. In alighting in the water, it takes the same care in folding and adjusting its wings, without wetting them, as the Albatross. One was observed to seize a *Thalassidroma* violently, and to hold it under the water as if for the purpose of drowning it; but whether the attempt succeeded or not was not noticed. The small Petrel did not appear to be afraid of this species.

Rodgers' Fulmar Petrel, or *Lupus*, as it is called by the natives, is an inhabitant of the Prybilof Islands, where it was found by Mr. H. W. Elliott. He states that it is the only representative of the *Procellarinæ* that he saw on or about the islands. It repairs to the cliffs, on the south and east shores of Saint George's, in great numbers, coming up early in the season, and selecting some rocky shelf, secure from all enemies save man, where, making no nest whatever, it lays a single large, white, oblong-oval egg, and immediately begins sitting upon it. Of all the water fowls, this is the one most devoted to its charge, for it cannot be scared from the egg by any demonstration that may be made in the way of throwing stones or shouting, and it will rather die as it sits than take to flight. The Fulmar lays between the 1st and the 5th of June; the eggs are very palatable, being fully equal to those of the domestic Duck, and even better. The natives lower themselves over the cliffs, and gather a large number of them every season.

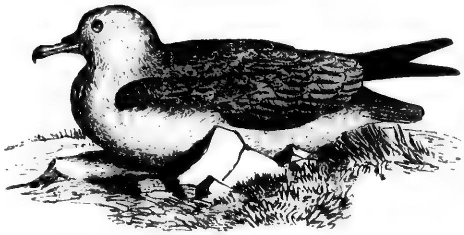
This species of Fulmar never flies in flocks, and pairs early. It is then exceedingly quiet, and is never heard to utter any sound, save a low droning croak when it is disgorging food for its young. The chick comes out from the shell a perfect puff-ball of white down, gaining its first plumage in about six weeks. This is a dull gray, black at first, but by the end of the season it becomes like the parents' in coloration, only much darker on the back and scapularies. Its egg is naturally very similar to that of *Fulmarus glacialis*. As a general rule it is more elongated than the egg of the eastern bird; but this difference is not very striking. The shell of the egg is rougher, and filled with innumerable raised granulations and minute depressions. Its average measurement is 2.90 inches in length, and 1.90 in breadth. The color is white, but liable to be stained, and soiled from various causes, with dirty yellow or brown discolorations.

Specimens of the eggs of this bird were also obtained at St. George's by Captain Smith and by Mr. Dall. Their extreme length was 3.00 inches, and the least breadth 1.85.

GENUS **PRIOCELLA**, HOMBRON AND JACQUINOT.

Priocella, HOMB. & JACQ. Compt. Rend. XVIII. 1844, 357 (type, *P. Garnoti*, HOMB. & JACQ., = *Procellaria glacialoides*, SMITH).

CHAR. Similar to *Fulmarus*, but bill much slenderer, the nasal tubes shorter, more depressed, concave on top, and separated by a wide space from the maxillary unguis.



P. glacialoides.

The generic name *Thalassoica*, REICH. ("Syst. Av." 1852, p. iv) has usually been employed for this species. But, aside from any question of priority (*Thalassoica* dating 1852, and *Priocella* 1844), the type of *Thalassoica* is explicitly stated to be the *Procellaria antarctica* (GMEL.), a bird which the late Professor W. A. Forbes has recently ("Zool. 'Challenger,'" Vol. IV. 1882, p. 59) made the type of a new genus, *Aeipetes*, and which is certainly perfectly distinct generically from the type of the genus *Priocella*. *Aeipetes*, however, is clearly a synonyme of *Thalassoica*.

Priocella glacialoides.

THE SLENDER-BILLED FULMAR.

Procellaria tenuirostris, AUD. Orn. Biog. V. 1839, 333; B. Am. VII. 1844, 210 (not of TEMM. 1828). — LAWR. in Baird's B. N. Am. 1858, 826. — BAIRD, Cat. N. Am. B. 1859, no. 637.
Thalassoica glacialoides, b. *tenuirostris*, BONAP. Consp. II. 1856, 192.
Fulmarus tenuirostris, COUES, Check List, 1873, no. 583.
Priocella tenuirostris, RIDGW. Pr. U. S. Nat. Mus. Vol. 2, 1880, 209; Nom. N. Am. B. 1881, no. 706. — COUES, 2d Check List, 1882, no. 817.
Procellaria glacialoides, SMITH, Illustr. S. Afr. B. 1849 (?), t. 51.
Thalassoica glacialoides, REICHENB. Syst. Av. 1852, p. iv. — BONAP. Consp. II. 1856, 192. — COUES, Pr. Ac. Nat. Sci. Phil. 1866, 30.
Thalassoica glacialoides, a. *polaris*, BONAP. Consp. II. 1856, 192.
Procellaria Smithi, SCHLEG. Mus. P.-B. Proc. 1863, 22.
Priocella Garnoti, HOMB. et JACQ. Voy. Pole Sud. III. 1853, pl. 32, fig. 42 (*fide* GRAY).

HAB. Seas throughout the southern hemisphere; also, whole Pacific coast of North America (common off the Columbia River). Apparently absent from the North Atlantic.

SP. CHAR. *Adult:* Head, neck, and lower parts white; upper parts pale pearl-gray, fading gradually into the white of the head; remiges dark slate, the inner webs of the primaries chiefly white. "Irides brownish black; nostrils, culmen, and a portion of the base of the upper mandible bluish lead-color; tips of both mandibles fleshy horn-color, deepening into black at their points; remainder of the bill pinky flesh-color; legs and feet gray, washed with pink on the tarsi, and blotched with slaty black on the joints" (GOULD).[1]

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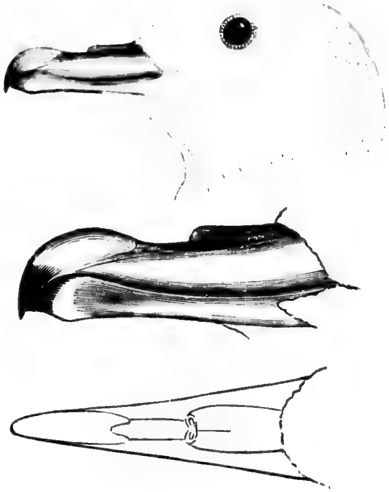
[1] Male killed at Valparaiso, Chili, Aug. 4, 1879: "Legs gray, with blue stains; bill gray, with blue patches" (SHARPE, P. Z. S. 1881, p. 11).

Total length, about 18.50 inches; wing, 13.00–13.50; tail, 5.00; culmen, 2.10; tarsus, 1.90.

A specimen from South Africa has a much slenderer bill than have two examples from Oregon; the bill is also differently colored, the dusky of the basal portion of the maxilla being almost or quite absent, and that at the tip more restricted.



This species was first described by Audubon from a specimen procured near the Pacific coast by Dr. Townsend, which was said to have been taken at sea, not far from the mouth of the Columbia River. The only information in regard to it, as furnished by Mr. Townsend, is derived from a brief manuscript note appended to the bird, and quoted by Audubon, to the effect that it was first observed when about a day's sail from the mouth of the Columbia. Its habits are spoken of as almost precisely the same as those of *Daption capensis*, both keeping constantly around the vessel, and frequently alighting in her wake, for the purpose of feeding. It was easily taken with a hook baited with pork, and at times — particularly during a gale — was so tame as almost to allow itself to be taken with the hand. The stomachs of most of the birds that Dr. Townsend captured were found to contain a species of sepia and some oil.

According to Mr. Cassin, it has a most extensive range of locality, being known to frequent the southern points of both of the great divisions of the globe, and those of Australia, and many other localities in the Pacific Ocean. Only a single specimen was found among the collection brought home by the Wilkes Exploring Expedition, which was labelled as having been obtained on the coast of Oregon.

According to Dr. Cooper, the only more recent evidence of the appearance of this species on our Pacific coast, and of its claim to be classed as a bird of California, is founded upon a supposed skeleton of a bird of this species obtained on the beach of Catalina Island in June, 1863.

GENUS **PRIOFINUS**, HOMBRON AND JACQUINOT.

Priofinus, HOMB. & JACQ. Compt. Rend. XVIII. 1844, 355 (type, *Procellaria cinerea*, GMEL.).
Adamastor, BONAP. Consp. II. 1856, 187 (type, *A. typus*, BP. = *Procellaria cinerea*, GMEL.).

CHAR. Size medium; rectrices, twelve; bill moderately stout, the culmen much shorter than the tarsus, and about three times the greatest depth of the bill near the base; nasal tubes short, and separated from the maxillary unguis by a space equal in extent to about two thirds the length of the unguis, which is more than twice as long as the nasal tubes; nostrils nearly circular, opening directly forward.

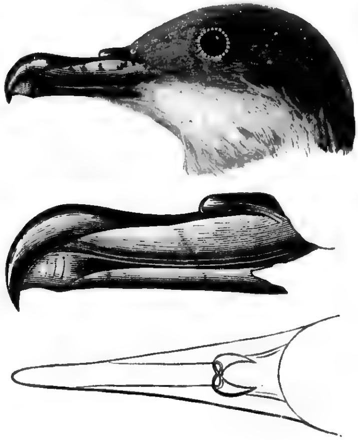
Priofinus cinereus.

THE BLACK-TAILED SHEARWATER.

Procellaria cinerea, Gmel. S. N. I. 1788, 563.
Priofinus cinereus, Homb. & Jacq. Compt. Rend. XVIII. 1844, 355.
Puffinus cinereus, Lawr. in Birds N. Am. 1858, 835. — Baird, Cat. N. Am. B. 1859, no. 651.
Adamastor cinereus, Coues, Pr. Philad. Acad. 1864, 119. — Streets, Bull. U. S. Nat. Mus. no. 7, 1877, 29.
? *Procellaria melanura*, Bonn. "Enc. Méth. 1790, 79."
Adamastor melanurus, Coues, Check List, 1873, no. 595.
Priofinus melanurus, Ridgw. Pr. U. S. Nat. Mus. Vol. 2, 1880, 209; Nom. N. Am. B. 1881, no. 707. — Coues, 2d Check List, 1882, no. 830.
Procellaria hæsitata, Licht. ed. Forst. Descr. An. 1844, 208. — Gould, B. Austr. VII. 1848, pl. 67 (not of Kuhl, Beitr. Zool. 1820, 142; Tem. Pl. Col. 1820, 416, = *Œstrelata hæsitata* !).
Adamastor typus, Bonap. Consp. II. 1856, 187.
Procellaria adamastor, Schleg. Mus. P.-B. Procell. 1863, 25.
Puffinus Kuhlii, Cass. Pr. Philad. Acad. 1862, 327 (not of Boie).

Hab. South Pacific Ocean; accidental off coast of California (Monterey; Lawrence).

Sp. Char. *Adult:* Head, neck, and back silky cinereous, fading insensibly into whitish on the chin, throat, and foreneck; wings, rump, and upper tail-coverts darker and more brownish than the back; primaries and tail dusky. Lower parts white, the crissum and whole under surface of the wing brownish gray, the flanks, and sometimes the sides, tinged with the same. Bill dull light horn-yellow, the nasal tubes, culmen as far as the unguis, and the maxillary sulcus blackish; legs and feet light brownish, in the dried skin.[1]



Wing, 12.25–13.50 inches; culmen, 1.75–1.85; depth of bill through base, .70–.75; tarsus, 2.25–2.30; middle toe, 2.50–2.60.

The history of the manners and our knowledge of the distribution of this species is wanting. All that is known in regard to it is that it was first referred to as one of our Western coast-birds by Mr. Lawrence, under the name of *Procellaria hæsitata*, based upon an example said to have been killed off the coast near Monterey, and found in the collection of N. Pike, Esq. Afterward, in the "Pacific Railroad Reports," Vol. IX., it was given as *Puffinus cinereus.*

In the "Proceedings of the Philadelphia Academy," 1862, Mr. Cassin describes as *P. Kuhlii* certain examples that had been taken, Sept. 11, 1853, by Professor F. H. Storer, of the Rogers Exploring Expedition, about fifty miles off the Cape of Good Hope. These are regarded as identical with the Monterey example; and these two instances of the occurrence of this species in widely separated localities constitute the sum of our scanty knowledge of its distribution.

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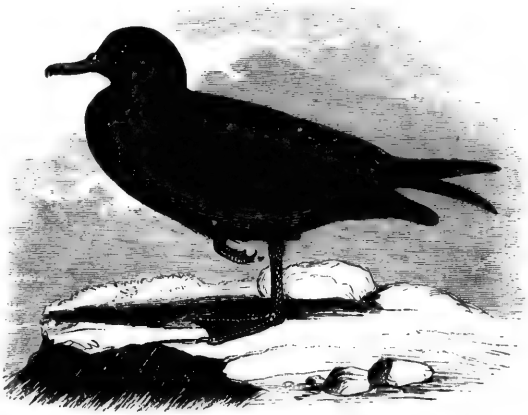
[1] "Irides dark brown; culmen and nostrils black; tip of upper mandible blackish horn-color; tomia whitish horn-color; lower part of under mandible blackish horn-color; feet white, tinged with blue, the outer toe brownish black" (Gould).

GENUS **PUFFINUS**, BRISSON.

Puffinus, BRISS. Orn. VI. 1760, 131 (type, *Procellaria puffinus*, BRÜNN., = *P. anglorum*, TEMM.).
Nectris, BONAP. (ex FORST.), Consp. II. 1856, 201 (type, *Puffinus brevicaudus*, BRANDT).

CHAR. Similar to *Priofinus*, but bill much slenderer, the nasal tubes not more than half as long as the maxillary unguis, depressed anteriorly, ascending basally, the nostrils opening obliquely upward, usually narrower, and separated by a thick septum; culmen much shorter than the tarsus; space between the nasal tubes and the unguis equal to about three fourths the length of the latter.



P. Stricklandi.

Synopsis of American Species of Puffinus.

A. Lower parts white.
- *a.* Bill stout, the depth through the base equal to one third its length; nostrils circular.
  1. **P. Kuhlii.** Above, brownish gray, the dorsal feathers tipped with paler; sides of the head and neck, along the line of junction of the gray and white, transversely undulated with these colors. Wing, about 13.00–14.00 inches; culmen, 1.80–2.00; depth of bill through base, .65–.75; tarsus, 1.85–2.00; middle toe, 2.10–2.25. *Hab.* Middle Atlantic, chiefly the eastern side.
  2. **P. borealis.** Similar to *P. Kuhli*, but much larger. Wing, 14.50 inches; tail, 6.50; culmen, 2.25; depth of bill through base, .75; tarsus, 2.20; middle toe, 2.30. *Hab.* Off coast of Massachusetts.
- *b.* Bill slender, the depth through the base decidedly less than one third the total length; nostrils longitudinally oval, more horizontal.
  3. **P. major.** Above, sooty grayish brown, the dorsal feathers with paler tips; longer upper tail-coverts mostly white; abdomen more or less clouded with smoky gray or grayish brown; flanks and crissum chiefly grayish brown; bill dusky. Wing, 11.50–13.00 inches; culmen, 1.80–1.85; depth of bill at base, .60–.65; tarsus, 2.20–2.25; middle toe, 2.40–2.50. *Hab.* Atlantic Ocean generally.
  4. **P. creatopus.** Above, sooty slate, the dorsal feathers with paler tips; no white on upper tail-coverts; malar region, sides of the throat, and sometimes the anal region, indistinctly barred, or transversely spotted, with grayish; flanks and crissum sooty grayish; bill pale

horny or buffy, the culmen darker, the ungui grayish. Wing, 12.50–13.25 inches; culmen, 1.60–1.70; depth of bill through base, .65–.75; tarsus, 2.05–2.12; middle toe, 2.15–2.40. *Hab.* Pacific coast from California to Chili.

5. **P. anglorum.** Above, uniform blackish, the dorsal feathers without lighter tips; lower eyelid and crissum white. Wing, 8.50–9.25 inches; culmen, 1.35–1.40; depth of bill at base, .40–.45; tarsus, 1.70–1.80; middle toe, 1.65–1.70. *Hab.* North Atlantic, particularly the eastern side.

6. **P. Auduboni.** Similar in color to *P. anglorum*, but black of the head not extending below the eyes; crissum dusky, except near anal region. Wing, 7.60–8.00 inches; culmen, 1.20–1.25; depth of bill at base, .35; tarsus, 1.50–1.60; middle toe, 1.45–1.50. *Hab.* Warmer parts of the Atlantic Ocean, north to New Jersey.

[**P. obscurus.** Similar to *P. Auduboni*, but with the lower tail-coverts entirely white. *Hab.* Southern Pacific Ocean; accidental on Pacific coast of North America?[1]]

7. **P. gavia.** Similar in color to *P. anglorum* and *P. Auduboni*, but no white about the eye, and the crissum fuliginous. Wing, 9.00 inches; culmen, 1.30–1.40; depth of bill through base, .35; tarsus, 1.75; middle toe, 1.70–175. *Hab.* Coast of Lower California to New Zealand.

B. Lower parts uniform fuliginous or smoky gray, like the upper.

8. **P. Stricklandi.** Uniform fuliginous-dusky, much lighter and more grayish below; bill uniform dusky. Wing, 11.15–12.00 inches; culmen, 1.60–1.75; depth of bill through base, .50–.55; tarsus, 2.05–2.15; middle toe, 2.05–2.20. *Hab.* North Atlantic.

9. **P. griseus.** Similar in color to *P. Stricklandi*, but chin and throat paler, the under wing-coverts grayish white, with dusky shaft-streaks. Wing, 11.15–11.50 inches; culmen, 1.55–1.65; depth of bill through base, .45–.55; tarsus, 2.12–2.25; middle toe, 2.05–2.25. *Hab.* South Pacific, north to Lower California.

10. **P. tenuirostris.** Similar to the last in color, but darker; more blackish above and more gray beneath. Wing, 10.00–10.10 inches; culmen, 1.20; depth of bill at base, .40; tarsus, 1.90–1.95; middle toe, 1.90–1.95. *Hab.* North Pacific.

Puffinus Kuhlii.

THE CINEREOUS SHEARWATER.

Procellaria puffinus, LINN. TEMM. Man. II. 1820, 805 (not of LINN. 1766).
Puffinus cinereus, CUV. Règ. An. I. 1817, 554. — TEMM. Man. IV. 1840, 506 (not of AUDUBON).
Procellaria cinerea, KUHL, Beitr. Zool. 1820, 148, pl. 9, fig. 12 (nec GMEL. 1788).
Procellaria Kuhlii, BOIE, Isis, 1835, 257, sp. 25.
Puffinus Kuhlii, BONAP. Consp. II. 1856, 202. — COUES, Pr. Ac. Nat. Sci. Philad. 1864, 128; Key, 1872, 331; Check List, 1873, no. 596; ed. 2, 1882, no. 596. — RIDGW. Nom. N. Am. B. 1881, no. 708.

HAB. Eastern Atlantic, particularly in the vicinity of Madeira, and the Mediterranean Sea; casual on the coast of North America (?).

SP. CHAR. *Adult:* Pileum, nape, back, scapulars and rump light brownish cinereous, the feathers of the dorsal region with lighter terminal borders; wings much darker slaty-fuliginous, the primaries and tail uniform dark slate; upper tail-coverts mottled with white terminally. Lower parts entirely white, the anterior under wing-coverts marked with narrow dusky shaft-streaks; malar region and sides of the neck and breast, along the junction of the white and gray, transversely undulated with white and cinereous. Bill dull yellowish, dusky on the base of the ungui; legs and feet light brownish in the dried skin.

Wing, about 13.00 inches; culmen, 1.80–2.00; depth of bill through base, .65–.75; tarsus, 1.85–2.00; middle toe, 2.10–2.25.

The biography of the common Cinereous Shearwater of Western Europe is one of some little difficulty, as the name *cinereus*, by which it has been long known to some writers, has been given by others to entirely different species. In speaking of one we are liable to quote accounts of habits or residence that belong to another. This species is of rare and even doubtful occurrence in the United States.

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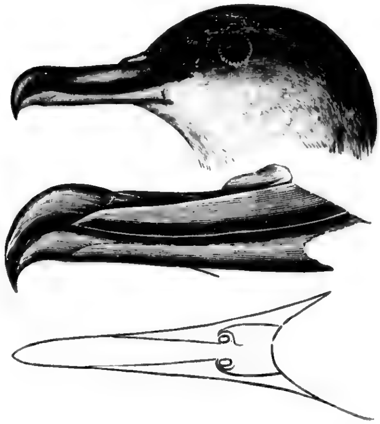
[1] King George's Sound, *fide* LATHAM, Synop. III. pt. ii. p. 417 (under "Dusky Petrel").

Mr. E. L. Layard ("Ibis," 1863) mentions procuring the eggs of what I presume to be this species, on islands north of Mauritius. The birds were breeding in holes in the cliffs. Their eggs are said to have measured 2.50 inches in length and 1.50 in breadth, and their color to be of a dull white.



This species, referred to as *P. cinereus,* is stated to have been met with by Mr. T. L. Powys among the Ionian Islands. Mr. C. A. Wright, in his Notes on the Birds of Malta ("Ibis," 1864), speaks of it as resident and breeding on the southern coast of Malta and Gozo, and also on the small islands of Filfa and Comino. It is said to lay a single unspotted egg of pure white, rather large, and to deposit it on the bare ground, in a crevice, or under a fragment of rock. While it is sitting on its egg it allows itself to be taken, without making any attempt to escape, merely snapping with its strong sharp bill. Both the old and the young birds, when handled, are apt to eject, in a very disagreeable manner, a greenish fluid formed by their feeding on the *Inula crithmoides,* one of the few plants which grow on those rocky islets.

Lieutenant Sperling also mentions finding these birds breeding in considerable numbers among the rocks of a small precipitous uninhabited island near Malta. He also noticed them at sea sitting on the water, where they were easily approached.

Mr. Godman met with this species in all the archipelagoes of Madeira and the Canaries, and thinks that it must breed on the Desertas or some of the neighboring islands, as he saw it there in the month of June in considerable numbers. Mr. E. C. Taylor ("Ibis," 1878) mentions the capture of a single individual in Alexandria, Egypt, in April, 1877.

Mr. Howard Saunders found this bird very abundant on the Mediterranean coast of Spain. It appeared to be much less nocturnal than the *P. anglorum,* and could be found in great numbers in the daytime. Both species are said to breed on the Island of Dragonena; but, to his great surprise, he found that he was too late for their eggs on the 20th of May.

Degland and Gerbe state that this species inhabits the Mediterranean and certain points in the Atlantic Ocean. It is found off the coast of Provence, Corsica, Sardinia, Sicily, in the Adriatic, in the Grecian Archipelago, and on the coast of Barbary, etc. It is said to wander to Greenland, and to be found thence to the Canary Islands; but Mr. L. Kumlien, while he speaks of it as common from Belle Isle to Grinnell Bay, did not observe any either on Cumberland Island or on the Greenland coast.

It breeds on the islands near the harbors of Marseilles, Toulon, and Hyères, nesting in holes in the rocks, laying upon the ground, without any preparations for a nest.

The egg is large, and somewhat rounded in shape, pure white in color, and without spots, or sometimes white, washed with gray; it measures 2.75 inches in its greater diameter, and 1.85 in its smaller. The female alone performs the duties of incubation; and as soon as the young bird is hatched, abandons her nest and hides the nestling in some other retreat in the neighborhood, and visits it only during the night to bring its food.

This bird feeds principally on fish, mollusks, and crustaceans, which it collects from the surface of the water. It is most commonly seen on the approach of a tempest, or during the morning or evening twilight. The young, when they first appear, are covered with a thick downy coat of a bright ashy gray.

Puffinus borealis.

THE NORTHERN SHEARWATER.

Puffinus borealis, Cory, Bull. Nutt. Orn. Club, VI. no. 2, April, 1881, 84 (coast of Massachusetts). — Job, ib. VIII. Oct. 1883, 244 (off Cape Cod, in August).

Sp. Char. "Above, brownish ash, the feathers of the back becoming pale at the tips, those on the nape and sides of the neck narrowly tipped with white; on the sides of the neck and head the ash and white gradually mingling, as in *P. Kuhlii*. Tips of the upper tail-coverts white. Under eyelid white, showing clearly in contrast with the ashy gray of the head. The first three primaries are light ash on the inner webs. Wings and tail brownish gray. Under parts white, slightly touched with ash on the flanks; lining of wings white. Under tail-coverts white, the longest tinged with ash near the ends, which extend nearly to the tips of the longest tail-feathers. Outside of foot greenish black, inside and webs dull orange; bill pale yellowish at the base, shading into greenish black, but again becoming pale near the tip.

"Length, 20.50 inches; wing, 14.50; bill (straight line to tip), 2.25, depth at base, .75; tail, 6.50; tarsus, 2.20.

"The type specimen of this Shearwater was killed near Chatham Island, Cape Cod, Mass., on the 11th of October last. Being unacquainted with it, I showed it to some fishermen, and requested them to procure any birds they might meet with resembling it. During the afternoon one of the boats returned bringing a number of birds of this species. The men stated that they had met with a flock a short distance from shore, and had shot several and knocked others down with their oars. According to their statement, after firing the first shot the birds flew about them in a dazed manner, often passing within a few feet of the boat" (Cory, *l. c.*).

This Shearwater, of which the National Museum has received two specimens since the above was written, is a near ally of *P. Kuhlii*, but is decidedly larger, and somewhat different in coloration. The coloration of the bill and other soft parts are in particular supposed to differ much in life and in freshly killed examples of the two species. The two examples in the National Collection measure as follows: —

No. 82488, male adult, Chatham, Mass., Oct. 11, 1880. Wing, 13.75 inches; tail, 5.60; culmen, 2.10; depth of bill through base, .80; tarsus, 2.25; middle toe, 2.45.

No. 93040, adult (sex not given), same locality, Oct. 12, 1880. Wing, 14.00 inches; tail, 5.70; culmen, 2.25; depth of bill through base, .80; tarsus, 2.15; middle toe, 2.30.

The habits and distribution of this recently discovered species are little known, the following, by Mr. Herbert K. Job, in the "Nuttall Bulletin" (VIII. 244), comprising nearly all there is on record: —

"On the 2d of last August I was out in a yacht collecting sea-birds, about thirty miles eastward from the southeast end of Cape Cod. Wilson's Petrels, Pomarine Skuas, and Greater and Sooty Shearwaters were abundant. Both these Shearwaters were often seen sitting on the water in flocks, associating freely with one another, and were easily approached.

"On one occasion I sailed up to quite a large flock, and shot a *P. fuliginosus*. As the rest rose, I suddenly perceived amongst them a Shearwater entirely new to me; and my other barrel soon brought it down. The yacht was put about, and I was on the point of laying hands on the prize, when it suddenly started up, and was gone — much to my chagrin. Soon, however, I saw a similar one flying about in company with several of the common Shearwaters. It presently came near, and was shot, proving to be a Cory's Shearwater. This was enough to keep me on the lookout for more; and when about half way in to land, another came sealing along over the water, and was also secured. These were all that I saw. One of the fishermen to whom I showed the birds reported having seen a few others the next day. This, however, may be open to some doubt.

"In habits they perfectly resemble the other species, but are readily distinguished from *P. major* by their lighter colors and conspicuously large yellow bill. They are very tame, and when engaged in feeding may almost be run down by a boat. Considerable effort is shown in rising from the water; but when once a-wing, they fly with great swiftness.

"Nothing is known of them by the fishermen, who perhaps overlook them among the thousands of the other commoner varieties. Specimens were first taken by Mr. Charles B. Cory in nearly the same locality where mine were captured, and were described by him in the 'Bulletin' of April, 1881."

Puffinus major.

THE GREATER SHEARWATER.

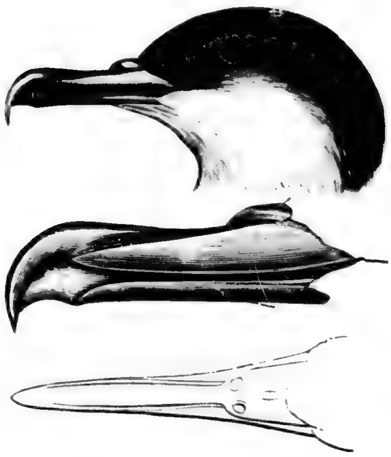
Procellaria puffinus, Kuhl, Beitr. Zool. 1820, 146, pl. 11, fig. 10 (not of Brünn, 1764).

Puffinus major, Faber, Prodr. Isl. Orn. 1822, 56. — Bonap. Consp. II. 1856, 203. — Lawr. in Baird's B. N. Am. 1858, 833. — Baird, Cat. N. Am. B. 1859, no. 647. — Coues, Key, 1872, 331; Check List, 1873, no. 597; ed. 2, 1882, no. 832. — Ridgw. Nom. N. Am. B. 1881, no. 709.

Puffinus cinereus, Bonap. Synop. 1828, 370, no. 311 (not of Cuvier, ex Kuhl). — Nutt. Man. II. 1834, 334. — Aud. Orn. Biog. III. 1835, 555; B. Am. VII. 1844, 212, pl. 456.

Hab. Atlantic Ocean generally, but more particularly north of the equator; south to Cape of Good Hope and Cape Horn.

Sp. Char. *Adult:* Pileum, down to below the eyes, and upper parts generally, sooty grayish brown, the first uniform, but the feathers of the back, rump, the scapulars, wing-coverts, and upper tail-coverts with considerably lighter terminal margins; nape lighter grayish brown than the pileum; primaries and tail uniform dusky; longer upper tail-coverts mostly white, their bases irregularly marked with grayish brown. Lower parts white, the abdomen more or less clouded with light grayish brown, the sides irregularly, but sparsely, marked with a darker shade of the same, the flanks and crissum nearly uniform grayish brown (sometimes much mixed with white). Bill brownish dusky; legs and feet pale brownish, in the dried skin, the outer side of the tarsus and outer toe dusky.[1]



Wing, 11.50–13.00 inches; culmen, 1.80–1.85; depth of bill through base, .60–.65; tarsus, 2.20–2.25; middle toe, 2.40–2.50.

Specimens from both sides of the North Atlantic are quite identical, and we can discover nothing peculiar in an example (No. 15541; T. R. Peale) from Tierra del Fuego.

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[1] "Bill yellowish green, the tips brownish black, tinged with green. Edges of eyelids dark gray; iris brown. Feet light greenish gray, webs and claws yellowish flesh-color" (Audubon).

The Greater Shearwater is a North Atlantic species, passing the greater part of its life in mid-ocean, and rarely approaching either shore. It belongs only as a rare visitor either to the European or to the American coast.

The first example known to have been seen in Great Britain was obtained by Mr. Arthur Strickland, and was shot in August, 1828, on a very stormy day, near the mouth of the Tees. It was seen early in the morning, sitting on the water like a duck, and was shot as it rose. A second specimen was obtained several years afterward. Other specimens have since been procured on various parts of the English sea-coast; and it is now supposed that individuals of this species had been previously met with, but confounded with the *Puffinus anglorum*.

Mr. Yarrell's figures and descriptions are taken from birds procured by Mr. D. W. Mitchell on the coast of Cornwall. Mr. Mitchell states that, in November, 1837, a man brought him one of these birds alive. He had found it asleep in his boat, about three o'clock in the afternoon, and the bird had probably taken up its quarters there by daylight. The boat was moored about two hundred yards from the shore. At that time there were a great many more of this species off Mount Bay, and two others were brought in that had been taken by hooks. He also states that this bird, in the adult plumage, appears pretty regularly every autumn, but not always in equal numbers. It had long been in several collections in Plymouth, England, where it was confounded with *P. anglorum*; but the latter is not common there, and hence the error. It is also quite abundant about the Scilly Isles, where it is known as the Hackbolt. It is a constant visitor there in the latter part of autumn, and its movements are said to be undistinguishable from those of the Manx Shearwater. Mr. Mitchell also informed Mr. Yarrell that the previous year, late in an afternoon, when the wind was blowing hard from the S.S.W., he saw through his telescope four of these birds in Mount's Bay. The weather was probably the cause of their being so far in shore, as they are generally deep-sea-goers. They had exactly the flight of *P. anglorum*, and they kept so close to the water as almost to skim the tops of the waves. He was informed that these birds appear some autumns in thousands off the islands of Looe and Polpezzo.

Mr. Thompson records the occurrence of birds of this species in the south of Ireland in the autumn. Mr. Davis, of Clonmel, mentions keeping one alive about a week. It was quite lively, and ran along very rapidly with its breast about an inch and a half from the ground. Having put it on a sloping roof, the bird seemed more at its ease than it was on a level surface, and mounted rapidly to the top; though when it came to the edge it made no attempt to fly, but fell heavily to the ground. It rarely stirred during the day, but kept itself as much concealed as possible; and if it could not hide its body, would endeavor to conceal its head. The fishermen sometimes keep these birds for weeks about their houses; and in some instances they become quite tame, and do not attempt to fly. It is rarely, if ever, shot, but is usually taken with a hook. It is commonly known by the name of Hagdown. Mr. Thompson also states that Dr. R. Bell, dredging off Bundoran, on the west coast of Ireland, July 16, 1840, saw three Petrels of this species, on the wing, near him. There are specimens in the British Museum said to be from South Africa.

Yarrell does not mention how or where this bird breeds, but states that the egg is very large for the size of the bird, and that only a single one is laid. It is said to measure 2.75 inches in length by 1.87 in breadth. Its color is pure white when deposited, becoming soiled as incubation progresses.

Audubon mentions finding this species ranging from the Gulf of St. Lawrence to that of Mexico; but he very rarely met with it near the coast. In sailing to

Labrador, when off the coast of Nova Scotia, one evening in June, about sunset, he observed a great number flying from the rocky shore, and believed they were breeding there. In this belief he was confirmed by the fact that hardly one was to be seen there by day, that being the time when these birds are in the habit of remaining about their nests. In September they are to be seen far from land, both by day and by night; and in calm weather they alight on the water, and may then be easily approached. They swim buoyantly, and when sporting on the water present a very graceful appearance. Two that had been caught with hooks walked about as well as Ducks. On being approached they would open their bills, raise their feathers, and eject through their nostrils an oily substance. When held in the hand they would continue to do this, at the same time scratching with their sharp claws and bills. They refused all sorts of food, and being very unpleasant pets, were soon set at liberty; when, instead of flying away directly, they plunged into the water, dived about, then splashed and washed themselves, before they took to their wings, flying with their usual ease and grace. In the stomachs of those he opened Audubon found portions of fish, crabs, seaweeds, and oily substances. He was of the opinion that this bird does not go farther to the north than Newfoundland; but Dr. Walker in his notes on the birds observed in the voyage of the "Fox," mentions that as the vessel approached Cape Farewell large numbers of this species were observed; Professor Reinhardt speaks of it as being a resident of Greenland; and I have its eggs taken in Greenland. Mr. Kumlien found this species abundant from Belle Isle to Resolution Island, but it was not observed by him in Greenland. Faber mentions it as of rare occurrence in Iceland, as only seen on the most southern portions, and as not known to breed there.

Dr. Henry Bryant ("Proc. Boston Soc. Nat. Hist.," VIII. 72) refers to a species of *Puffinus* as very numerous in the Straits of Belle Isle; and as at that time (July) they must have been feeding their young, their breeding-places were probably at no great distance. None of the inhabitants questioned by him had ever found the egg, or knew anything about their breeding-places. It may be that — like *P. Kuhlii* — it breeds earlier than most water birds. It occurs off the coast of Massachusetts early in August, if not before.

Mr. Godman states that this species is found throughout the Azores, and that it breeds there about the end of May, in holes in the cliffs. One bird that he shot contained an egg just ready for exclusion; but the bird he refers to, Mr. Dresser states, has been ascertained to be *P. Kuhlii*, and the presence of *P. major* in that region is discredited. But according to Mr. Dresser it has been obtained off the coast of Guinea by Pel, at the Cape of Good Hope by Smith and Dr. Van Horstock, and near Tierra del Fuego by Mr. T. R. Peale.

Mr. George C. Taylor, in a voyage from Liverpool to New York, met with large flocks of this species on the 22d of May, when nearing the coast of Newfoundland. On the following day, passing the longitude of Cape Race about ten miles from shore, there were again large flocks of this Shearwater. As the ship approached, the birds would rise, not in mass, but in succession, fly half a mile or so forward, and alight until the vessel again came near them. Toward evening they were not so numerous; but throughout the day he could see flocks or companies from twenty to a hundred sitting here and there on the sea. On the return voyage, leaving New York July 15, Mr. Taylor again fell in with this species on the 21st, two days after passing Cape Race. Mr. Boardman also informs me that he has found it quite common in September off the coast of Maine and Nova Scotia.

Its occurrence on the coast of Long Island is spoken of by Giraud as very rare.

A fine specimen in the collection of Mr. Brasher is mentioned as having been procured near the Narrows. It was taken by a fisherman, who noticed it feeding on the offal of the fish that he was cleaning. Not having any gun, and being desirous of capturing this rare bird, he resorted to the ingenious stratagem of attaching to the end of a line a fish-hook; and by letting this drift among the offal upon which the bird was feeding, it became fastened to the web, and was thus secured alive. It proved to be a fine adult male. Its stomach contained a few particles of shells, and its boldness had evidently been produced by extreme hunger.

Mr. Hurdis mentions two instances of the capture of this species in Bermuda. One specimen, alive, was given him by Mr. Downes. It had been found lying on the high road, on the opposite side of Hamilton Water, June 2, 1851. It was uninjured, and in perfect plumage. On the same day a second specimen was brought to him by a man who had observed it swimming near the shore; this also was captured alive. These were the only specimens then known to have been taken in Bermuda.

Mr. Dresser states that there is no authentic account of the breeding-habits of this Shearwater, and that the eggs which do duty for it in the cabinets of collectors are almost always those of *P. Kuhlii*. But I think he is mistaken, and that eggs taken by Moravian collectors in Greenland and referred to this species are authentic.

One example given me by Mr. Wilmot, collected on an island of South Greenland, measures 2.88 inches in length by 2.00 in breadth, is nearly oval in shape, has a ground originally white, but which has been soiled by the peaty black earth from which it was excavated. Another egg, collected by a different person at the same locality, is of smaller size, and of a yellowish white; it measures 2.75 inches by 1.85.

Puffinus creatopus.

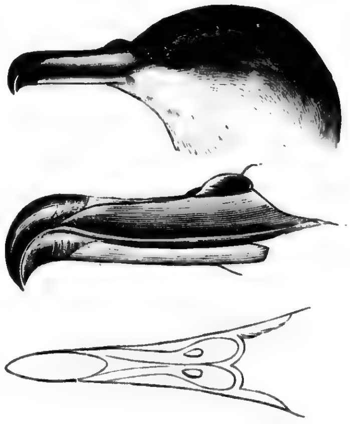
THE PINK-FOOTED SHEARWATER.

Puffinus creatopus, "COOPER (MSS.)," COUES, Pr. Ac. Nat. Sci. Philad. April, 1864, 131 (Lower California); Key, 1872, 331; Check List, 1873, no. 598; ed. 2, 1882, no. 833. — SALVIN, Ibis, 1875, 377 (Juan Fernandez). — RIDGW. Nom. N. Am. B. 1881, no. 710.

HAB. Coast of Lower California (San Nicolas), south to the Juan Fernandez group of islands.

SP. CHAR. *Adult:* Above, sooty slate, the feathers of the dorsal and scapular regions, with distinct terminal margins of paler grayish; wings darker than the back, the remiges nearly black, as is also the tail. Lower parts white, the malar region, sides of the throat, and sometimes the anal region indistinctly barred, or transversely spotted, with grayish. Flanks and crissum sooty grayish. Lining of the wing white, the feathers with dusky shaft-streaks. Bill pale yellowish horn-color or buffy, the ungui horn-gray, and the culmen dusky; legs and feet flesh-color in life, light brownish in the dried skin.

Total length, about 19 inches; extent, 45; wing, 12.50–13.25; culmen, 1.60–1.70; depth of bill through base, .65–.75; tarsus, 2.05–2.12; middle toe, 2.15–2.40.



Nothing is known as to the habits or habitat of this form, whose specific validity is not free from doubts. A single individual was procured on San Nicolas Island, in California, said to be about the size of *P. major.* It is not referable to any other known species, and Dr. Cooper has no doubts as to its validity. He thinks that its habits and those of *Priocella glacialoides* are very similar. He states that they associate together along the coast from San Francisco south. Dr. Cooper has seen and observed both species during the six warmer months of the year, but was unable to learn anything in regard to their breeding on any part of our coast. He considers it quite probable that they may breed on some of the distant Pacific islands in the winter. They are generally seen in flocks several miles off the shore, flying, like the Albatross, by rapid flappings, alternating with sailings. They congregate quickly around shoals of fish, and dive to a short distance beneath the water in pursuit of them. They often rest on the water, swimming very lightly, but not rapidly, and appear to be the most active when the wind roughens the surface of the water, enabling them to scoop up small fish from the agitated tops of the waves. Dr. Cooper further states that he found this species most abundant and most approachable about San Nicolas Island, where the water is shoal and small fish are numerous. The birds were moulting about the first of July.

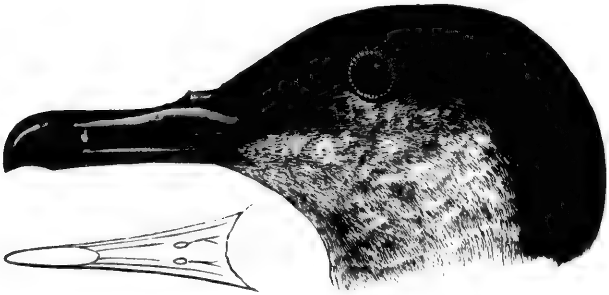
Puffinus anglorum.

THE MANX SHEARWATER.

Procellaria puffinus, Brünn. Orn. Bor. 1764, 29, sp. 119. — Linn. S. N. I. 1766, 213.
Procellaria anglorum, Temm. Man. II. 1820, 806.
Puffinus anglorum, Temm. Man. IV. 1840, 509. — Nutt. Man. II. 1834, 336. — Aud. Orn. Biog. III. 1835, 604 ; B. Am. VII. 1844, 214, pl. 457. — Lawr. in Baird's B. N. Am. 1858, 834. — Baird, Cat. N. Am. B. 1859, no. 649. — Reinhardt, Ibis, 1861, 16 (Greenland). — Coues, Pr. Ac. Nat. Sci. Philad. 1864, 134 ; Key, 1872, 331 ; Check List, 1873, no. 599 ; ed. 2, 1882, no. 834. — Ridgw. Nom. N. Am. B. 1881, no. 711.
Puffinus arcticus, Faber, Prodr. Isl. Orn. 1822, 56, sp. 1.

Hab. North Atlantic generally, chiefly the eastern side; rare or casual off the American coast?

Sp. Char. *Adult:* Above, uniform fuliginous-dusky, this color occupying the sides of the head and neck. Lower parts, including the under surface of the wing and the malar region, white, the latter, also the sides of the neck, sometimes transversely spotted with plumbeous; femorals and outer webs of lateral lower tail-coverts, fuliginous-dusky or grayish. Bill dusky (greenish black in life), the lower edge of the mandible paler; iris dark brown; "inner and middle of outer



side of tibia [*i. e.* tarsus] dingy orange, the rest greenish black, as is the fourth toe and outer side of the third, the inside of the latter and the whole of the second dingy orange; the webs much paler; claws brownish black" (AUDUBON).

Total length, about 15.00 inches; extent, 32.00; wing, 8.50–9.25; culmen, 1.35–1.40; depth of bill through base, .40–.45; tarsus, 1.70–1.80; middle toe, 1.65–1.70.

Although some writers speak of this species as being common on the North Atlantic coast of America, I am disposed to question the correctness of this statement. At most, so far as I can ascertain, it is possibly of very occasional and rare occurrence, and only to be met with after a violent storm; but even of this we have no evidence. So far as I can learn, this bird does not breed on any part of our coast, nor has it been noticed on any of our Arctic exploring expeditions. Except at sea, several hundred miles from our coast, it was not seen by Audubon, and is given by Professor Reinhardt as being only an occasional visitor in Greenland. Mr. Boardman informs me that a single individual of this species has from time to time been met with at sea off the coast of Maine and Nova Scotia; but he regards such an occurrence as something extremely uncommon, and as purely accidental. This bird is also mentioned as being only an accidental and very rare visitor on the coast of Long Island. It is exclusively aquatic, and never visits land except for purposes of incubation, generally selecting islands remote from the mainland, the rocky nature of which offers favorable opportunities for seclusion and safety. It is found in such situations along the western shore of Europe, from Iceland to the Mediterranean, and is more common in the latter sea than in its more northern breeding-places.

In Iceland, according to Faber, it remains all the winter, occurring only in its neighboring water. It is more common in the south, especially on the Vestmannaeyjar, than in the north.

According to Mr. Howard Saunders, it is quite abundant on the Mediterranean coast of Spain; but from the nocturnal character of its habits, it does not appear to be so common as it really is. But, he adds, pass a night at sea in a fishing-boat, and as the sun goes down, and the last rosy tint fades from the mountains, the air suddenly becomes alive with dark, sharp-winged Manx Shearwaters, dashing hither and thither in the gloom, and justifying the name the Malaga fishermen give to them of *Animas* and *Diablos.* They breed on the Island of Dragonera; but, to Mr. Saunders's great surprise, he was too late to procure their eggs, for all had been hatched out before the 20th of May.

Mr. Godman found this species at the Azores, but not so abundant as was a larger one (*P. Kuhlii?*). Like the latter, it was found to be breeding in holes in the cliffs, in May. It is highly esteemed by the inhabitants as an article of food. The specimens obtained were all very fat, and two of the females were found to contain eggs ready for exclusion.

In his account of the birds of Madeira and the Canary Islands, Mr. Godman refers to this species as occurring in all the islands of those groups, and thinks that it must breed on the Desertas and on other neighboring islands, as he saw it there in considerable numbers in the month of June.

Mr. C. A. Wright ("Ibis," 1864) speaks of it as a resident species, breeding in company with *P. cinereus* (*P. Kuhlii*) on the southern coast of Malta, and on several small rocky islands in the neighborhood. He states that he has frequently visited Filfla in June and July, and taken the eggs, as well as the young and the old birds. This species lays a single egg, of pure white color, which it deposits in a crevice or under a fragment of rock, and which is said to be smaller and more elliptical than the egg of the larger species, to which he refers under the name of *P. cinereus.*

Captain Sperling also mentions finding these birds breeding on a small rocky island near Malta. The fishermen take them in large numbers in nets, and make use of their flesh as bait.

Mr. A. G. More ("Ibis," 1865) states that this Shearwater breeds on the Scilly Islands, and also on Lundy Island, in the Bristol Channel. It was formerly abundant on the Calf of Man, but has become extinct there, its extermination being supposed to have been caused by rats. It is also said to breed on the Island of Staffa, the Outer Hebrides, in Orkney, and in Shetland.

Captain Elmes found this species breeding on the Island of Mingalay, one of the Hebrides. He was told that it was once much more common than it is now, and that the young birds were formerly very highly regarded as an article of food. Of late this Shearwater has been very nearly driven away by the intrusions of the *Fratercula arctica.*

Mr. D. W. Mitchell furnished Yarrell with an interesting sketch of his visit to the Scilly Islands. There, on a barren island called Annet, the northern shore of which is abrupt and craggy, and gradually sloping toward the south, where it narrows into a sandy peninsula, is the headquarters of this Shearwater. Yet a visitor to this spot may wait an entire day in June without seeing one of these birds, either on land or water. There are many of them near all the time, as is easily perceived by the odor that comes from their burrows. As soon as the sun is down, the birds themselves begin to issue in small parties. One evening he encountered a great gathering of not less than three hundred of them in Smith's Sound, in the middle of the tideway, washing, dipping, preening their feathers, and stretching their wings, evidently having just been roused from sleep. They are said to sit low on the water, and when disturbed there to make no noise; but in their holes they are noisy enough, the fishermen's names of *Crew* and *Cockothodon* being derived from the guttural sounds the bird pours forth as the spade approaches its nest.

The egg is frequently deposited on the fine sandy soil without any preparation, although generally there is a slight accumulation of fern-leaves and old stems. The bird lays but one egg, which when fresh is of the most dazzling whiteness, and of peculiarly beautiful texture. It is said to measure 2.42 inches in length by 1.75 in breadth, and to be very large in comparison with the size of the bird.

This Shearwater when handled vomits a very offensive oil, which is apparently of a green color, although the stain which it leaves is yellow. The quantity of this fluid discharged is often enormous. The young bird when just hatched is covered with a grayish black down, except a stripe along the centre of the breast and belly, which is white.

This species is also found on the coast of Norway, on the Faröe Islands, and about Cape Farewell. It is rare on the east coast of England. Mr. Strickland procured it from Smyrna.

Puffinus Auduboni.

AUDUBON'S DUSKY SHEARWATER.

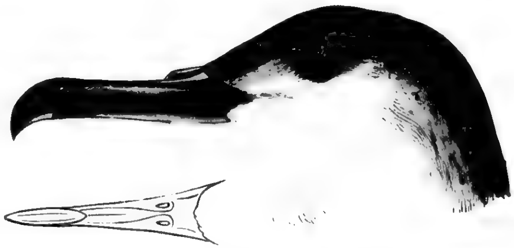
Puffinus obscurus, BONAP. Synop. 1828, 371; Consp. II. 1856, 204 (nec *Procellaria obscura*, GMEL.). — NUTT. Man. II. 1834, 337. — AUD. Orn. Biog. III. 1835, 620; B. Am. VII. 1844, 216, pl. 458. — LAWR. in Baird's B. N. Am. 1858, 835. — BAIRD, Cat. N. Am. B. 1859, no. 650. — COUES, Pr. Ac. Nat. Sci. Philad. 1864, 137; Key, 1872, 331; Check List, 1873, no. 600; ed. 2, 1882, no. 835.

? *Puffinus Lherminieri*, LESSON, Rev. Zool. 1839, 102 (Antilles).

Puffinus Auduboni, FINSCH, P. Z. S. 1872, 111. — RIDGW. Nom. N. Am. B. 1881, no. 712.

Hab. Warmer parts of the Atlantic Ocean; north, casually, to New Jersey; accidental in Europe.

Sp. Char. *Adult:* Above, uniform fuliginous-dusky; lower parts, including lower half of the lores, suborbital region, auriculars, sides of the neck, and under surface of the wing white, the auricular region clouded with grayish dusky; sides of the breast dusky grayish; femorals and outer webs of lateral lower tail-coverts (sometimes nearly whole crissum) fuliginous-dusky. "Bill light blue, the tips black, mouth light blue; edges of eyelids light blue, iris bluish black; outside of tarsus and toes indigo-black, inside and webs pale-yellowish flesh-color, claws bluish black" (Audubon). *Downy young:* Side of head and neck, with throat and chin, naked, or with very minute and scant downy flecks, these more conspicuous along the middle line of the throat. Rest of the head, neck, and body covered with a smoky-gray down, this shorter and denser on the lower parts, where paler or grayish white along the middle line; looser and longer on the head and neck above, and back. Bill and feet colored as in the adult. (Described from No. 80980, Saba, W. I.; F. A. Ober.)



Total length, about 11.00 inches; extent, 26.00; wing, 7.60–8.00; culmen, 1.20–1.25; depth of bill through base, .35; tarsus, 1.50–1.60; middle toe, 1.45–1.50.

According to Dr. Finsch (l. c.), the *Puffinus obscurus* (Gmel.) is a Pacific Ocean species, distinguished by its white under tail-coverts, larger size, and by the white on the side of the head, covering the loral and auricular regions. It is not unlikely that true *P. obscurus* occurs as an accidental or occasional visitor, since Latham ("Synop." III. pt. 2, p. 417) mentions a specimen "in the Leverian Museum, said to have come from King George's Sound, on the American coast."

The Dusky Shearwater is an Atlantic species, found on the eastern coast of the United States from New Jersey to Florida. It also occurs among the West India Islands, and breeds in the Bermudas and the Bahamas. It extends its wanderings to the coast of Africa, and is said to breed in several of the groups of islands lying west of that coast. The area over which it is distributed is probably large, although not yet fully made out.

Mr. Godman was informed by some of the inhabitants of the Island of Flores that a bird which from the description given, he considers as undoubtedly belonging to this species, visits that island, arriving early in March, and nesting in the holes in the cliffs. These birds had reared their young, and had again left, before Mr. Godman arrived; and he was unable either to see them or to procure a specimen. The inhabitants frequently tame and rear the young of this species; and they are said to afford great amusement from the grotesque manner in which they waddle about. In a visit subsequently made by this gentleman to Madeira and the Canaries, he states that he succeeded in identifying this species, and found it abundant all over that group of islands; and has no doubt that it breeds on the Desertas and on other neighboring islands, as he saw it there in considerable numbers, though he failed to procure examples.

This species was ascertained by Major Wedderburn to breed on Gurnet-head Rock; and is supposed to be the same as the bird described as the "Cahow" by Captain Smith, in his account of Bermuda, in 1629. It was found breeding by Captains Orde and McLeod, and specimens of the bird, together with its eggs and young, were procured in May, 1849. To this statement Mr. Hurdis adds that this species is still known in Bermuda by the name of "Cahow," which is said to be an imitation of its peculiarly guttural note, described as sounding like the syllables *cao-hoo.* Mr. Salton Smith, of St. George, informed Mr. Hurdis that he visited Black Rock, at the entrance to Castle Harbor, where he obtained two young birds of this species and a dozen or more of their eggs. Unfortunately his boat was upset, and all the specimens lost. The two young birds were both found in the same hole, but the old ones were not seen. On the 17th of May, 1849, Captains Orde and McLeod visited Black Rock, landed without difficulty, and on a ledge half way from the summit captured two fine examples of this species. One was sitting on a single white egg; the other had nothing under it. Both were found in holes in the rock, and allowed themselves to be captured by the hand. A young bird of the same species, covered with black down, was also found upon the rock. The egg is described as about the size of that of the Common Fowl, and more finely polished on the surface.

Audubon mentions that on the 26th of June, 1826, when becalmed in the Gulf of Mexico, off the western coast of Florida, he noticed that birds of this species were quite numerous. They were skimming along near the surface of the water, and in doing this would flap their wings six or seven times in succession, and then sail for three or four seconds with great ease, having their tail much spread and their long wings extended at right angles with the body. On approaching a mass of seaweed they would raise their wings obliquely, drop their legs and feet, and appear to run on the water, and at length to alight. They were able to swim and dive with all the ease of a Duck. Their wings are strong and muscular. The stomach of a specimen examined resembled a leather purse, and was found much distended with fish of various kinds, partially digested or entire, some of which were two and a half inches long. Audubon also states that he has met with this species as far north as Sandy Hook; and it is said by Giraud to visit the coast of Long Island occasionally as a straggler.

Dr. Bryant, on his visit to the Bahamas, was repeatedly told of a singular bird called the Pimlico, which had a hooked bill, and only flew by night, and which bred in the Keys. This bird proved to be the present species. It was very abundant, and was found on all the uninhabited Keys which were near the channel and not frequently visited. The birds were breeding in holes in the rocks. He first met with them near Nassau, in the Ship-channel Keys. Incubation had already begun on the 24th of March. The nest consisted of a few dry twigs, and was always placed in a hole or under a projecting portion of the rock — seldom more than a foot from the surface, and never out of reach of the hand. On being caught, the bird made no noise and offered no resistance. The egg does not in the least resemble that of a Hen, being much more fragile, and more highly polished. A number of eggs were broken in endeavoring to remove the bird from the nest; they varied a good deal in size and form, some being quite rounded, and others elongated. Three of them are said to have had the following measurements: 2.32 inches by 1.41; 2.04 by 1.30; 2.01 by 1.45. Both sexes incubate.

The mournful note of these birds could be heard at all hours of the night by those anchored in the night-time near one of the Keys on which they were breeding. During the day they could be seen feeding in large flocks, generally out of sight of land.

They did not fly round much, but remained quiet on the surface of the water. Dr. Bryant did not see one of them on the banks; and his observations were in conflict with those of Audubon, as he never saw them dive, or apparently catch any fish, though they were often in company with Boobies and different species of Terns, all of which were actively employed in fishing. Between Andros and the Bank he saw on the 26th of April a large flock of this species covering the surface of the water, or hovering over it, for an extent of a square mile. Their number must have been enormous. In the stomachs of all those he examined — nine in number — he found a mass largely composed of the scales of small fish and the mandibles of squids and cuttle-fish.

Four eggs of this species (Smithsonian Institution, No. 1714), obtained by Dr. Bryant, are of a clear chalky-white color, exactly oval in shape, and have the following measurements: 2.10 by 1.45 inches; 2.05 by 1.40; 2.00 by 1.40; 2.00 by 1.40.

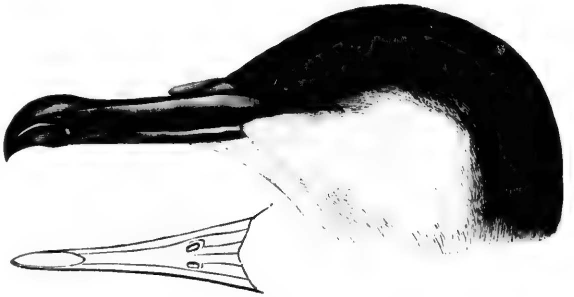
Puffinus gavia.

THE BLACK-VENTED SHEARWATER.

Procellaria gavia, Forst. Descr. Anim. 1844, 148. — Hutton, Ibis, 1872, 84.
Æstrelata gavia, Gigl. & Salvad. Ibis, 1869, 66.
Cookilaria gavia, Gray, Handl. III. 1871, 107.
Puffinus gavia, Finsch, J. f. O. 1872, 256. — Ridgw. Nom. N. Am. B. 1881, no. 713.
Puffinus opisthomelas, Coues, Pr. Ac. Nat. Sci. Philad. April, 1864, 139 (Cape St. Lucas); Key, 1872, 331; Check List, 1873, no. 601; ed. 2, 1882, no. 836.

Hab Coast of Lower California (Cape St. Lucas), and across the Pacific to New Zealand.

Sp. Char. *Adult:* Above, uniform fuliginous-dusky, the feathers without distinct lighter terminal margins; lower parts, including entire under surface of the wings, white, the sides of the neck and suborbital region faintly and indistinctly undulated with dusky grayish; crissum and posterior portion of the flanks grayish fuliginous. Bill brownish (much like the color of the back), the unguis and lower edge of both mandibles paler; iris dark brown; legs and feet pale colored in the dried skin, the outer side of the tarsus and outer toe dusky.



Total length, 12.25 to 15.00 inches; extent, about 26.00 to 32.00; wing, 9.00; culmen, 1.30–1.40; depth of bill through base, .35; tarsus, 1.75; middle toe, 1.70–1.75.[1]

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[1] Captain F. W. Hutton (in the "Ibis," January, 1872, p. 84), gives the average measurements of New Zealand specimens as follows: —

"Expanse, 26; length, 12¼ to 13¼; bill along culmen, 1½, to gap, 2; tail, 3.5 to 2.75."

I am not aware that anything is known in regard to the habits or specific peculiarities of this recent addition to our fauna. It was first met with on our Pacific coast by Mr. John Xantus at Cape St. Lucas, in Lower California, where he procured two fine specimens. It is supposed to occur along the whole of our Pacific coast as far north at least as Oregon. Some eggs have been received by the Smithsonian Institution from the sea-coast of Northern California. From their size and their close resemblance to the eggs of other members of this family, there can be but little doubt that they are eggs of birds of this species.

Puffinus Stricklandi.

THE SOOTY SHEARWATER.

Puffinus fuliginosus, STRICKL. P. Z. S. 1832, 129 (not *Procellaria fuliginosa* of KUHL, 1820). — LAWR. in Baird's B. N. Am. 1858, 834. — BAIRD, Cat. N. Am. B. 1859, no. 648. — COUES, Key, 1872, 332; Check List, 1873, no. 602; ed. 2, 1882, no. 837. — RIDGW. Nom. N. Am. B. 1881, no. 714.

Nectris fuliginosa, KEYS. & BLAS. Wirb. Eur. 1840, p. xciv.

Nectris fuliginosus, COUES, Pr. Ac. Nat. Sci. Philad. 1864, 123.

Puffinus cinereus, DEKAY, Zool. N. Y. Birds, 1844, 287, pl. 136, fig. 298.

Procellaria tristis, LICHT. ed. FORST. Descr. An. 1844, 23.

Puffinus tristis, GRAY, Ibis, 1862, 44. — BULLER, B. N. Zeal. 1873, 317.

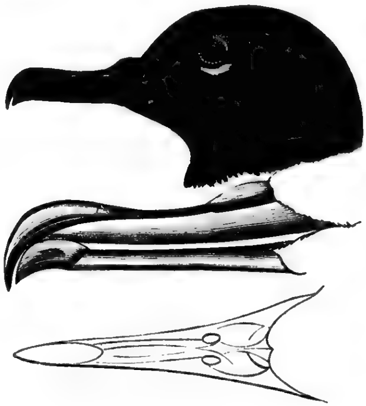
Puffinus Stricklandi, RIDGW. MS.

HAB. North Atlantic Ocean; south to the coast of New England.

SP. CHAR. *Adult:* Uniform fuliginous-dusky, much lighter and more grayish underneath; scapulars, interscapulars, and wing-coverts sometimes indistinctly paler on their terminal margins. Bill uniform dusky, sometimes with a brownish tinge; legs and feet dusky brownish (in the dried skin), the outer side of the tarsus and outer toe blackish.

Wing, 11.15–12.00 inches; culmen, 1.60–1.75; depth of bill through base, .50–.55; tarsus, 2.05–2.15; middle toe, 2.05–2.20.

This species is of very nearly the same size and form as *P. major*, but is slightly smaller in all its measurements, has the bill decidedly more slender, and the tarsus and middle toe more nearly of the same length.



The history, habits, and distribution of the Sooty Shearwater have been little known. On our eastern coast it is abundant from the waters of the North Atlantic as far south as South Carolina. It escaped the notice of our earlier ornithologists, and no reference is made to it either by Wilson, Nuttall, or Audubon. Indeed all the information we have in regard to this species is very vague and unsatisfactory. Its breeding-places and its manner of reproduction have remained entirely unknown. It is at times very abundant during the month of August off the coast of Massachusetts, and in the latter part of that month in 1871, during the prevalence of stormy weather, a large number of birds of this species were driven by the storm into Wood's Hole. This Shearwater is stated — on not entirely trustworthy authority — to be especially abundant off the coast of Newfoundland, but to be much more rare on the opposite shores of Europe. Dekay, in his Report on the Birds of New York, mentions this bird as having been occasionally captured on the coast of New York, and speaks of it as occurring from the Gulf of Mexico to Newfoundland. Degland and Gerbe assign to it the same habitat, and regard its appearance on the European coast as purely accidental, and as limited chiefly to the coast of the British Islands. It has been several times observed off the coast of Normandy, in the neighborhood of Dieppe.

By some writers the Fuliginous Shearwater has been regarded as only an immature form of *Puffinus major*. The accounts of its capture indicate that it is more abundant on the eastern coast of England than on the southern or western.

Captain Feilden informed Mr. Dresser that he observed this species, in company with *Puffinus major*, sixty miles south of Cape Farewell on the 22d of June, 1875, and was informed that it was common off the coast of Labrador. It is abundant in the Bay of Fundy and off the coast of Nova Scotia and New Brunswick. It has been found in the Atlantic as far south as the Cape of Good Hope, where Mr. Smith states it to be common.

Puffinus griseus.

THE DARK-BODIED SHEARWATER.

Procellaria grisea, Gmel. S. N. I. 1788, 564 (nec Kuhl, 1820).

Puffinus griseus, Finsch, J. f. O. 1874, 209. — Salvin, Rowley's Orn. Misc. IV. 1876, 236. — Ridgw. Nom. N. Am. B. 1881, no. 715.

"*Procellaria tristis*, J. R. Forst. Descr. Anim. 1844, 23" (Salvin). — Hutton, Ibis, 1872, 83.

Nectris amaurosoma, Coues, Pr. Ac. Nat. Sci. Philad. April, 1864, 124 (Cape St. Lucas).

Puffinus amaurosoma, Gray, Handl. III. 1871, 102. — Coues, Key, 1872, 332; Check List, 1873, no. 603; ed. 2, 1882, no. 838.

Nectris fuliginosus, a. *chilensis*, Bonap. Consp. II. 1856, 202.

"*Puffinus chilensis*, Ph. & Landb."[1]

Gray Petrel, Lath. Synop. III. pt. 2, p. 399.

Hab. Coast of Lower California (Cape St. Lucas); thence to the South Pacific (New Zealand, etc.).

Sp. Char. *Adult:* Above, uniform fuliginous-dusky, the tips of some of the feathers indistinctly lighter; lower surface much paler, or smoky grayish; lining of the wing grayish white, mottled with smoky gray. Bill dusky grayish brown, sometimes tinged with grayish white; legs and feet brownish (reddish in life ?).[2]

Wing, 11.15–11.50 inches; culmen, 1.55–1.65; depth of bill through base, .45–.55; tarsus, 2.12–2.25; middle toe, 2.05–2.25.

Having compared the type of *Nectris amaurosoma*, Coues, and a Chilian example of what is unquestionably the same species, with specimens of the Atlantic *P. Stricklandi*, Nobis (*P. fuliginosus*, Auct., nec Kuhl, nec Gmel.), we can see no reason for uniting them; on the other hand, they appear to be very distinct. Furthermore, the Pacific specimens correspond very exactly with Latham's description of his "Grey Petrel," upon which the *Procellaria grisea* of Gmelin is based.

P. griseus is smaller in all its measurements than *P. Stricklandi;* has the under wing-coverts white, faintly mottled with pale gray, and with very distinct shaft-streaks of darker gray; while in *P. Stricklandi* these feathers are smoky gray, mottled with white (the latter, however, prevailing near the bend of the wing), and without conspicuous dark shaft-streaks. In *P. griseus* the chin and upper part of throat are lighter gray than in *P. Stricklandi.*

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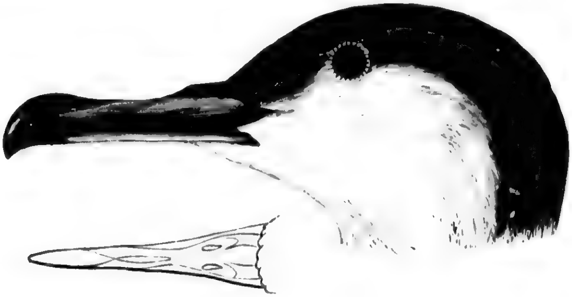
[1] On labels of specimens in Coll. U. S. Nat. Mus., from Museo Nacional of Chili.

[2] According to Captain F. W. Hutton ("Ibis," January, 1872, p. 83), the fresh colors are as follows: "The bill is bluish white, passing into black on the culmen and gonys; feet and legs bluish white; in the young birds the bill, legs, and feet are brownish black."

The type specimen of the *Puffinus amaurosoma* of Coues was taken off the coast of Cape San Lucas. The National Museum also possesses specimens from the coast of Chili. According to Buller, it is extremely abundant in the neighborhood of Stewart's Island and along the adjacent coast of New Zealand.



The only accounts I can find touching the nidification of this bird are — the statement of Mr. Buller that its egg is white, with reddish-brown stains, and measures 3.25 inches in length and 2.00 in breadth; and the Notes of Mr. Travers, quoted by Mr. Dresser, that this Shearwater is common all around the coasts of the Chatham Group, where it burrows in peaty ground a horizontal hole, from three to four feet deep, and turning slightly to the right or left. At the end of this hole it forms a rude nest of twigs and dead leaves. Only one egg is laid, and the male is said to assist in incubation; and the parent birds are very savage while on the nest, biting and scratching those who molest them. The old birds roost on the shore, and the noise they make during the whole night is described as being something absolutely frightful. Taken out of their holes, they fluttered about on the ground for some time in a confused manner before they made for the sea.

Puffinus tenuirostris.

THE SLENDER-BILLED SHEARWATER.

Procellaria tenuirostris, TEMM. Pl. Col. 1828, 587. — SCHLEG. Mus. P.-B. Proc. 1863, 26.
Puffinus tenuirostris, TEMM. & SCHLEG. Fauna Jap. Aves, 1849, 131, pl. 86. — COUES, Key, 1872, 332; Check List, 1873, no. 604; ed. 2, 1882, no. 839. — RIDGW. Nom. N. Am. B. 1881, no. 716.
Nectris tenuirostris, BONAP. Consp. II. 1856, 202. — COUES, Pr. Ac. Nat. Sci. Philad. 1864, 126.
Priocella tenuirostris, NELS. Cruise Corwin, 1883, 152 (not of authors !).
Puffinus curilicus, LICHT. Nomencl. Mus. Berol. 1854, 100.

HAB. North Pacific, including the coast of Northwestern America (Sitka, Kadiak, Unalashka, Kotzebue Sound, etc.).

SP. CHAR. *Adult:* Above, uniform fuliginous-dusky; beneath, light smoky gray, darker on the flanks and crissum, lighter on the chin. Bill dusky brownish; legs and feet pale-colored, the outer side of the tarsus and outer toe dusky.

Wing, 10.00–10.10 inches; culmen, 1.20; depth of bill at base, .40; tarsus, 1.90–1.95; middle toe, 1.90–1.95.

This species quite closely resembles the *P. nativitatis*, STREETS,[1] from Christmas Island, Pacific

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[1] PUFFINUS (NECTRIS) NATIVITATIS, Streets, Bull. U. S. Nat. Mus. no. 7, 1877, 29.
Uniform dusky-fuliginous, slightly paler beneath. Bill deep black; legs and feet dusky. Wing, 9.75 inches; culmen, 1.25; depth of bill through base, .45; tarsus, 1.75; middle toe, 1.70.

Ocean, but is much lighter colored beneath, *P. nativitatis* being dark fuliginous below, only a few shades paler than the upper parts. The proportions are also quite different.

This species appears to be exclusively an inhabitant of the North Pacific coasts. Mr. Dall refers to it as the "Seal Bird," and states that a specimen, a perfect skin, was bought of Isaac Koliak, an Eskimo of great intelligence, who informed him that he had bought it at Kotzebue Sound, when on a visit, having never himself seen such a bird on Norton's Sound. The man of whom this bird was purchased said that it was called *Minklok tingmynk*, or "Seal-bird," as it is only found with the seals, and follows them in their migrations.

Examples of this species are stated by Mr. Cassin to have been taken off the coast of Japan, near the eastern shore of Niphon, in lat. 36° N.; and Messrs. Blakiston and Pryer mention another example obtained after a typhoon at Yoshino, Tamato, the nearest sea being forty miles distant. It had been struck down by a Hawk. It agreed with the figure in the "Fauna Japonica." Its local name is given as *Umikamome*. Nothing is known in regard to its distribution, numbers, habits, or breeding-place.

GENUS **ŒSTRELATA**, BONAPARTE.

Aestrelata, BONAP. Consp. II. 1856, 188 (type, *Procellaria hæsitata*, KUHL).
Cookilaria, BONAP. Consp. II. 1856, 190 (type, *Procellaria Cookii*, GRAY).
Pterodroma, BONAP. Consp. II. 1856, 191 (type, *Procellaria macroptera*, SMITH).

CHAR. Bill about as long as, or shorter than, the tarsus, very deep, and much compressed; ungui very large, occupying nearly the terminal half of the bill; nasal case very short (less than one third as long as the unguis).

The species of *Œstrelata* are very numerous (about twenty being known at the present time), but only three of them are recorded from North American waters. They are the following: —

1. **Œ. hæsitata**. *Adult* (?): Forehead, sides of head, neck (all round), entire lower parts, upper tail-coverts, and base of tail white; upper parts and patch on top of head dusky, and side of head with a blackish bar. *Young* (?): White much more restricted, immaculate only on forehead, lores, and median lower parts (the latter even sometimes more or less mixed with dusky); nape and sides of neck, with upper tail-coverts, white only beneath the surface. Bill black; iris brown; tarsi and basal third, or more, of toes, with webs, yellowish in dried skins (flesh-color in life?). Wing, 11.70–12.00 inches; tail, 5.50–5.75, graduated for about 1.50–2.30; culmen, 1.20–1.45; depth of bill at base, .52–.68; tarsus, 1.35–1.40; middle toe, 1.50, or more. *Hab.* Warmer parts of Atlantic Ocean, straying north to Florida, France, and England. Sandwich Islands?
2. **Œ. Fisheri.** *Adult:* Above, silvery plumbeous, with a distinctly darker (blackish slate) area on lesser wing-covert region; greater and middle wing-coverts and tertials plumbeous-gray, very distinctly edged with white; outer primaries and their coverts blackish slate, the inner ones gradually more plumbeous; tail-feathers transversely vermiculated with white and gray, the middle feathers uniform plumbeous-gray. Lores, chin, throat, jugulum, and crissum immaculate white; forehead and crown white, spotted with dusky; abdomen, flanks, and breast smoky plumbeous on the surface, but pure white immediately beneath, this white showing through in places; a distinct dusky spot immediately before and beneath the eye; middle portion of wing-lining and inner webs of primaries pure white, the latter with a distinct blackish stripe next the shaft. Bill black; iris brown; legs flesh-color (?), pale brownish in dried skin; toes dusky, the basal third of inner web and basal phalanx of inner and middle toes pale-colored. Wing, 10.15 inches; tail, 4.00, its graduation, .75; culmen, 1.00; depth of bill at base, .40; tarsus, 1.35; middle toe, with claw, 1.70. *Hab.* Off coast of Alaska (Kadiak).

3. **Œ. gularis.** *Adult* (?): Above, quite uniform dark sooty grayish, the concealed bases of all the feathers, however, white; greater and middle wing-coverts lighter and less sooty grayish, but without distinct light edges; upper tail-coverts and tail uniform rather light sooty gray, the inner webs of the latter paler, on the outer finely mottled; chin, throat, and crissum immaculate white; other lower parts white beneath the surface, but this overlaid by sooty gray, nearly uniform over abdomen and flanks. Under side of wings mainly white, the anterior and outer border dusky. Wing, 9.88–10.00 inches; tail, 3.95–4.00, its graduation about .90; culmen, 1.02–1.03; depth of bill at base, .46–.50; tarsus, 1.20–1.37; middle toe, with claw, 1.55–1.70. *Hab.* South Pacific Ocean.
4. **Œ. jamaicensis.**[1] *Adult:* Uniform sooty brown, lighter beneath, darkest on occiput and sides of head; upper tail-coverts pale lavender-gray, sometimes tinged with buff. Bill, legs, and feet entirely black; iris (?). Wing, 11.00 inches; tail, 5.00, its graduation, 1.30–1.50; culmen, 1.15–1.20; depth of bill at base, .60; tarsus, 1.40; middle toe, 1.70–1.80. *Hab.* Jamaica (breeding in Blue Mountains).

Œstrelata hæsitata.

THE BLACK-CAPPED PETREL.

Procellaria hæsitata, Kuhl, Mon. Proc. Beitr. Zool. 1820, 142, no. 11 (excl. syn.). — Temm. Pl. Col. 416. — Newton, Zoologist, X. 1852, 3691.

Æstrelata hæsitata, Coues, Pr. Ac. Nat. Sci. Philad. 1866, 139; Key, 1872, 328; Check List, 1873, no. 585.

Œstrelata hæsitata, Ridgw. Nom. N. Am. B. 1881, no. 717. — Coues, 2d Check List, 1882, no. 819.

Æstrelata diabolica, Bonap. Consp. II. 1856, 189 (ex "*Procellaria diabolica*, L'Herminier").

Procellaria meridionalis, Lawr. Ann. Lyc. N. Y. IV. 1848, 475; in Baird's B. N. Am. 1858, 827.

Hab. Warmer parts of the Atlantic Ocean, straying to Florida, England, and France. Sandwich Islands?

Sp. Char. *Adult:* "Forehead, sides of head, neck all round, upper tail-coverts, base of tail, and all under parts white; back clear bistre-brown (nearly uniform, but the feathers often with paler or ashy edges), deepening on the quills and terminal half of tail; crown with an isolated blackish cap, and sides of head with a black bar (younger birds with the white of the head and neck behind restricted, so that these dark areas run together); bill black; tarsi and base of toes and webs flesh-colored (drying yellowish); rest of toes and webs black. *Young:* Extensively dark below?" (Coues).

Total length, about 16.00 inches; "wing, 12; tail, 5¼, cuneate, its graduation, 1½; tarsus, 1⅖; middle toe and claw, 2⅛; bill, 1⅜, ⅔ deep at base, ⅜ wide; tube, ⅓" (Coues).

A specimen from the Sandwich Islands (No. 61259; V. Knudsen, coll.), labelled "*Puffinus meridionalis*," differs from the above diagnosis in several particulars, and may possibly be distinct. The entire upper parts, except forehead, are continuously uniform dusky, nearly black on the head, the nape, back, and scapulars more grayish brown; this dark color even covers uniformly the entire side of the head and neck, except that portion of the former before the eye, and thence downward and backward across the malar region. The feathers of the nape and side of the neck, however, are white immediately beneath the surface, this color showing conspicuously wherever the feathers may be disturbed. There is likewise no exposed white on the upper tail-coverts or base of the tail; the former are, however, very abruptly white beneath the surface, but the latter is white only at the extreme base; and the outer rectrices have a considerable amount of white on their inner webs. The lower parts are almost entirely white, there being merely a few plumbeous irregular bars on the flanks. The measurements are as follows: Wing, 11.80 inches (less than the average of *Œ. hæsitata* as given by Dr. Coues); tail, 5.75, its graduation, 2.40; culmen, 1.22; depth of bill at base, .55; tarsus, 1.40; middle toe (without claw), 1.55. In view of the differences of coloration, much more graduated tail, and smaller dimensions — and especially in view of its different habitat, no specimens of *Œ. hæsitata* having to our knowledge been reported from any part of the Pacific Ocean — the specimen in question may be really distinct. Should such prove to be the case, the name *Œ. sandwichensis* is proposed as a suitable designation.[1]

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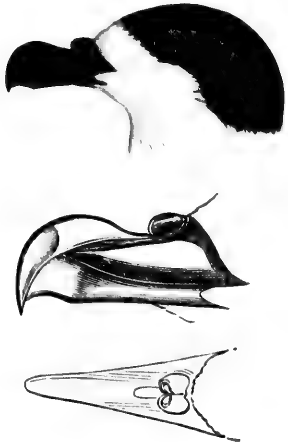
[1] Œstrelata jamaicensis (Bancroft) Newton.
Procellaria jamaicensis, Bancr. Zool. Jour. V. 1828, 81.
Œstrelata jamaicensis, A. & E. Newton, Handb. Jam. 1881, 117.
Pterodroma caribbæa, Carte, P. Z. S. 1866, 93, pl. x.
Œstrelata caribæa, Auct.
Blue Mountain Duck, Gosse.

This species is introduced into the synopsis on account of the possibility of its occasional occurrence off the South Atlantic coast of the United States.



Hardly anything is known of the history, habits, and distribution of this rare species. Its claim to be counted into our fauna rests only on accident, and nothing has been ascertained in regard to either the places or the periods of its reproductive season. It is a great wanderer, or more probably, under the influences of continued storms, is occasionally driven to regions quite remote from its natural habitat. Its usual abode is said by Degland and Gerbe to be the Indian Ocean; and its occurrence in Europe and elsewhere is considered by them as only occasional and accidental.

The museum of Boulogne-sur-Mer possesses a specimen procured in that neighborhood; and it has been elsewhere observed on the coasts of France and England. Yarrell records an instance where one was taken on a heath at Southacre, Norfolk, by a boy. It was alive when captured, and greatly exhausted, but had strength enough to bite violently the hand of its captor, who thereupon killed it. This occurred in the spring of 1850. The specimen is in the private collection of Mr. Newcome, of Hockwold Hall, Brandon. A specimen of this bird from the Indian Ocean is in the Museum at Leyden. Yarrell states that one has also been taken in Australia; and one obtained in the South Seas was in Mr. Bullock's museum. A specimen brought from Hayti by John Hearne is now in the British Museum.

Mr. George N. Lawrence, in Vol. IV. "Pacific Railroad Reports," cites this species under the name of the "Tropical Fulmar," and mentions its distribution on our coast as extending from New York southward to Florida, referring to two specimens, one taken off the coast of Florida, the other on that of New York. The first of these was given to Mr. Lawrence by Dr. C. H. Stillwell, of Brooklyn, N. Y., who had obtained it in Florida in the winter of 1846. It had been wounded, and was floating in the salt lagoon, opposite Indian River Inlet, on the east coast of Florida, two hundred and forty miles from St. John River. The other specimen had been shot in the bay at Quoque, Long Island, after a severe storm, in July, 1850. No other specimens are on record.

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[1] In pattern of coloration, this specimen agrees exactly with an example of *Œ. Cooki*, but has the back, scapulars, rump, and tail decidedly less ashy.

Œstrelata Fisheri.

FISHER'S PETREL.

Œstrelata Fisheri, RIDGW. Pr. U. S. Nat. Mus. Vol. 5, June 26, 1883, 656 (Kadiak, Alaska).

SP. CHAR. *Adult?* (type of the species, No. 89431, U. S. Nat. Mus. Kadiak Island, Alaska, June 11, 1882; WILLIAM J. FISHER): Head, neck, and lower parts pure white, but this unvaried only on sides of forehead, lores, malar region, chin, throat, jugulum, and crissum; feathers of middle of forehead (longitudinally) and fore part of crown, marked with a central spot of slate-color, the feathers of the hinder part of crown and occiput similarly marked, but the spots becoming gradually more transverse posteriorly, and, at the same time, the lighter borders of the feathers more grayish; a blackish spot immediately before and beneath the eye; sides of breast washed with grayish, and belly and flanks overlaid by a nearly uniform wash of smoky plumbeous, all the feathers being very pure snow-white immediately beneath the surface; many of the feathers of the sides barred with plumbeous-gray; anterior under wing-coverts dark sooty gray or slate-color, the coverts along the outer margin of the under side of the wing mainly of the same color; rest of wing-lining, with inner webs of primaries, uniform pure white, the quills having merely a narrow, but abruptly defined, dusky stripe next the shaft, the white portion being margined for a short distance along the terminal portion with grayish; axillars mainly plumbeous, or barred with the same. Nape, back, scapulars, rump, and upper tail-coverts plumbeous, darkest on the lower part of the rump, the feathers with distinct dusky shaft-streaks, except on the nape. Tail white, with very irregular zigzag bars of plumbeous-gray, the middle rectrices mainly gray (the central pair, however, are wanting). Lesser wing-coverts dark slate (many shades darker than the back); greater coverts, secondaries, and tertials plumbeous-gray, more silvery toward edge of wing, very distinctly edged with pure white; three outer primaries and primary coverts slate-black, the inner quills gradually more grayish, and narrowly bordered with white. Bill wholly deep black; tarsi, most of basal phalanx of inner toe, and basal portion of webs, light brownish (flesh-color in life?), rest of feet dusky. Wing, 10.15 inches; tail, 4.00, slightly graduated; culmen, 1.00; depth of bill at base, .40, width at base, .40; tarsus, 1.35; middle toe, 1.40.

This elegant Petrel, probably the handsomest of the genus, belongs to the delicately formed, slender-billed group containing *Œ. Cooki*, GRAY, *Œ. gavia*, FORST., *Œ. desolata*, GMEL., and *Œ. Defilippiana*, GIGL. & SALVAD. It differs from all the allied species, however, in so many marked peculiarities of dimensions and of coloration, that comparison is scarcely needed with any. To *Œ. Defilippiana* there is some resemblance, but the differences are many and striking, as follows: —

Œ. Defilippiana. Lower parts pure white, merely tinged laterally with cinereous; greater wing-coverts, secondaries, and tertials dusky, edged terminally with grayish; six middle rectrices uniform cinereous, the outer pair with exterior webs uniform white (?). Tarsi pale bluish. Wing, 9.00 inches; tail, 3.80; culmen, 1.04; tarsus, 1.07; middle toe, with claw, 1.40. *Hab.* Eastern South Pacific Ocean (off coast of Peru).

Œ. Fisheri. Lower parts overlaid by a wash of smoky plumbeous, nearly uniform on abdomen and flanks; greater wing-coverts, secondaries, and tertials, silvery plumbeous, broadly edged with pure white; only the two middle tail-feathers uniform cinereous, the outer webs of *all* the rest white zigzagly barred, or transversely vermiculated with cinereous. Tarsi pale brownish (flesh-colored in life?). Wing, 10.15 inches; tail, 4.00; culmen, 1.00; tarsus, 1.35; middle toe, with claw, 1.70. *Hab.* Eastern North Pacific Ocean (off coast of Alaska).

The most nearly related species with which we have been able to compare the present bird is *Œ. gularis*, PEALE. The latter, however, is very distinct in coloration (agreeing only in the color of the under surface of the wing), has the bill much stouter, and the tarsi and toes decidedly shorter.

Œstrelata gularis.

PEALE'S PETREL.

Procellaria gularis, Peale, Zool. U. S. Expl. 1848, 299.
Œstrelata gularis, Brewst. Bull. Nutt. Orn. Club, IV. 1881, 94 (Livingston Co., N. Y.).
Procellaria mollis, "Gould," Cass. U. S. Expl. Exp. 1858, 410 (not of Gould, 1844).
Æstrelata mollis,[1] Coues, Pr. Philad. Acad. 1866, 150 (part).

Hab. Antarctic Ocean ; accidental in Western New York (Livingston Co., *fide* Brewster, l. c.) ?

Sp. Char. *Adult ?* (type specimen, No. 15706, Antarctic Ocean ; T. R. Peale): Above, nearly uniform brownish slate, more plumbeous on the secondaries and greater wing-coverts, which have very narrow (barely visible) whitish margins ; paler, and with the basal white shining through on the occiput and nape. Lores, cheeks, chin, and throat white, the two latter immaculate ; frontal feather slightly margined with whitish, and superciliary region mixed with white (only the tips of the feathers being dusky), forming a broken superciliary stripe extending nearly to the occiput ; ante- and sub-orbital regions nearly uniform dusky, but feathers with white bases. Lower parts white, but this overlaid on breast, abdomen, flanks, and anal region with smoky plumbeous, appearing almost uniformly of this color where the feathers are undisturbed ; jugulum transversely mottled or vermiculated with dusky ; crissum immaculate white. Lining of wing pure white, except anteriorly and exteriorly, where the color is uniformly dusky ; inner webs of primaries pure white, with an abruptly defined grayish stripe next the shaft. Tail uniform brownish gray, the inner web of the exterior feather white, mottled, or irregularly speckled, with gray. Bill uniform black ; tarsi and base of toes, with webs, pale colored (pinkish or flesh-colored in life), the terminal portion of the feet blackish.

Wing, 10.00 inches ; tail, 4.00 ; culmen, 1.05 ; nasal tubes, .30 ; length of mandible, measured from malar apex, .85 ; gonys, .25 ; tarsus, 1.30 ; middle toe, without claw, 1.25.

Although Mr. Cassin (l. c.) says that the specimen described above, and which is unquestionably the type of *Procellaria gularis*, Peale, "is quite identical with the type of *P. mollis*, of which there are numerous specimens, including those of Mr. Gould, in the museum of the Philadelphia Academy," he evidently overlooked the radical difference in the coloration of the under surface of the wing. Dr. Coues, who examined the Philadelphia Academy series, says (l. c.) that in all of these "the under surface of the wing is chiefly dusky brownish ; but there is an illy-defined and interrupted area of whitish, particularly toward the base of the primaries." *Œ. gularis*, then, must be considered as more nearly related to *Œ. Fisheri*, *Œ. Defilippiana*, *Œ. gavia*, and *Œ. desolata*, all of which have the under surface of the wing mainly or largely white.

A Petrel described by Mr. Brewster, in the "Bulletin of the Nuttall Ornithological Club" for April, 1881, from a specimen obtained in Livingston Co., N. Y., in April, 1880, is supposed to belong to this species. Mr. Brewster's description is as follows : —

"*Adult (?) plumage* (No. 5224, author's collection, Mount Morris, Livingston Co., N. Y., April, 1880) : Upper parts, including tail-coverts and exposed surfaces of rectrices, pure cinereous, which deepens to plumbeous only on the occiput, rump, and wings, the latter having the middle and greater coverts of the same tint as the back. The feathers of the back (but not those of the rump or occiput), with the greater and middle wing-coverts, broadly tipped with ashy white, giving these parts a scaled appearance. The throat, jugulum, upper part of breast, and under tail-coverts, pure silky white. The cinereous of the upper parts comes down along the sides of the neck, encroaching more and more, and deepening in tint as it extends backward, until it throws across the abdomen a broad band of nearly pure plumbeous. Around this colored tract there is nowhere a definite line of demarcation ; the cinereous of the neck fades imperceptibly into the white of the throat, and the edges of the abdominal bar become mingled with white, until the dark color is entirely lost along the sides under the wings and at the beginning of the under tail-coverts; while forward, on the lower part of the breast, and over the ventral region generally, the feathers are spotted, barred, or finely vermiculated, in varying shades of color. The sides of the head backward to behind the eye (where the band of color already described begins) are essentially white, but the feathers immediately below the eye are obscurely banded, and there is a narrow but distinct transocular fascia of a dark color, which barely interrupts a broad and pure white superciliary line passing from the bill to a short distance behind the eye. The forehead and crown are much mixed with white. On the forehead the white forms a broad edging to the feathers, and extending more narrowly around their tips, confines the plumbeous ashy to triangular central patches; but toward the crown it becomes restricted to the edges alone, and when the occiput is reached gives way entirely to the uniform plumbeous of that part.

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[1] Œstrelata mollis, Gould.
Procellaria mollis, Gould, Ann. & Mag. N. H. XIII. 1844, 363 ; B. Austr. VII. pl. 50. — Coues, Pr. Philad. Acad. 1866, 150.
Procellaria inexpectata, Licht. ed. Först. Descr. An. 1844, 204.
? *Œstrelata Kidderi*, Coues, Bull. U. S. Nat. Mus. no. 2, 1875, [illegible] = whole-colored phase ?).

"The peculiar color and marking of the wings, alike in both specimens, has already been so well treated by Dr. Coues that I will save repeating these details by referring the reader to his description, previously quoted in the present article. But in this connection it is necessary to call attention to two points which are not there noticed. The first is, that the *secondaries*, as well as the primaries, have the white areas on their inner webs. The second, that each successive primary, beginning with the first, is lighter and more plumbeous than the preceding one; but with the first *secondary*, the color abruptly darkens again, becoming on the exposed portion nearly black, and continuing uniformly so to the tertials, which are of an equally dark cast.

"The bill is black; the tarsus, obscure flesh-color with a bluish tinge. The basal third of toes, with contained webs, pale yellowish; the terminal portion black.

"*Dimensions:* Bill (chord of culmen), 1.03 inches; height at base, .46, width, .42; tarsus, 1.37; outer toe and claw, 1.65; middle, 1.70; inner, 1.43; wing, 9.88; tail, 3.95; the graduation of the rectrices, .90."

GENUS **BULWERIA**, BONAPARTE.

Bulweria, BONAP. Cat. Met. Ucc. Eur. 1842, 81 (type, *Procellaria Bulweri*, JARD. & SELBY); Consp. II. 1856, 194.

CHAR. Very similar to the smaller species of *Œstrelata* (*Œ. Cooki*, etc.), but tail longer and more graduated, bill less compressed, and feet smaller. Myological formula said to be very different.

The type of this species is so much like the smaller *Œstrelatæ* (as, for example, *Œ. Cooki*) that we should hesitate to separate it generically, were it not for important anatomical differences which are said to exist. The late Professor Forbes says (Zool. "Challenger" Expedition, Vol. IV. p. 60) that "*Bulweria* is a peculiar form, with no very close ally, and must be regarded as a highly specialized form, as shown by its myological formula . . . and its peculiar cuneate tail." The tail is decidedly more graduated than in *Œstrelata Cooki* (which among the true *Œstrelatæ* approaches most nearly in this and other features), and the feet are relatively smaller; but beyond these differences we are unable to appreciate any external characters of importance.

Besides *B. Bulweri* there is said to be another species, the *B. Macgillivrayi*, GRAY, from the Fiji Islands.[1]

Bulweria Bulwerii.

BULWER'S PETREL.

Procellaria Bulwerii, JARD. & SELBY, Illustr. Orn. pl. 65.

Thalassidroma Bulweri, GOULD, B. Eur. pl. 448. — KEYS. & BLAS. Wirb. Eur. 93. — SCHLEG. Rev. Crit. 134. — MACGILL. Man. II. 264. — GRAY, Gen. B. III. 648; Cat. Brit. B. 1863 224. — NEWTON, Man. N. H. Greenl. 1875, 108.

Æstrelata Bulweri, COUES, Pr. Philad. Acad. 1866, 158.

Œstrelata Bulweri, RIDGW. Pr. U. S. Nat. Mus. 1880, 209; Nom. N. Am. B. 1881, no. 718. — COUES, 2d Check List, 1882, no. 820.

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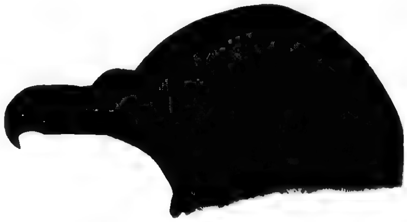
[1] *Thalassidroma* (*Bulweria*) *Macgillivrayi*, GRAY, Cat. B. Isl. Pacif. 1859, 56.

? *Procellaria anjinho*, HEINEKEN, Edinb. Jour. Sci. Oct. 1829.
Puffinus columbinus, MOQUIN-TANDON, in Webb & Berth. Nat. Hist. Canar. II. 1841, 44, pl. 4. fig. 2 (*Procellaria columbina* on plate).
Bulweria columbina, DRESSER, B. Eur. VIII. 1871, 551.
Bulwer's Petrel, YARR. Brit. B. ed. 2, III. 636, fig.; ed. 3, III. 664, fig.

HAB. Eastern Atlantic, including coasts of Europe and Africa. Accidental in Greenland.

SP. CHAR. *Adult:* Uniform fuliginous-dusky, lighter, more grayish brown underneath, the wings blackish, except the greater coverts, which are light grayish brown, like the lower parts. Bill black; legs and feet brownish (in dried skin).

Wing, 8.00 inches; tail, 4.75, its graduation, 1.45–1.75; culmen, .85; tarsus, .90–1.00; middle toe, .95.



This bird is said to be an occasional visitor to the Bermudas; but its occurrence there must be very rare, and due to accidental circumstances; and its claim to be received into the North American fauna appears to me to be very doubtful. The first published mention of Bulwer's Petrel was made by Selby and Jardine, in the second volume of their Illustrations; and it was there described from specimens procured by Mr. Bulwer, a gentleman who had been living for several years in Madeira, where this bird was ascertained to be resident during its breeding-season, chiefly on the small adjacent islets.

Dr. Schlegel also claims to possess an example of this Petrel procured in Greenland. Gould, in the twenty-second number of his "British Birds," mentions a single instance of its occurrence in England; this was on the banks of the Ure, near Tanfield, in Yorkshire, May 8, 1837, where a specimen of this bird was found which had been dead but a short time; and Mr. Dresser records another, taken off Scarborough in the spring of 1849.

It is not known to breed elsewhere than in the Canaries and Madeira. Moquin-Tandon speaks of it as very common on the small Island of Alegranza, where it breeds in the holes in the rocks. It has a cry resembling that of a puppy, from which it receives the local name of Perrito. Mr. Godman ("Ibis," 1872) mentions finding it breeding in considerable numbers on the small Island of Deserta. It was nocturnal in its habits, and was not seen flying about in the daytime, although there were plenty of a smaller species. The nests were low down at the foot of the cliffs, under the fallen rocks, where the birds were easily caught with the hand while sitting on their eggs.

Dr. Heineken ("Edinburgh Journal of Science," October, 1829) refers probably to this Petrel as found on the uninhabited islands near Madeira and Porto Santo. He states that it first appears in February and March, begins to lay in June, hatches out its young in July, and that none are seen after September until the following spring. It is never seen in flocks, nor in the Bay, but keeps out to sea, and is in a great measure nocturnal in its habits.

In 1850 a correspondent of mine — Dr. Frere, of London — sent me a number of fine specimens of the eggs of this species procured on the group of small islands near Madeira known as the Desertas. He informed me that they had been taken in burrows made by the bird in the soft earth under overlying bowlder-rocks, and in deep crevices in the cliffs. The eggs are of an oblong oval shape, of nearly equal size at either end, pure white in color, and measure about 1.65 inches in length by 1.20 in breadth. They are variable in size, differing in length from 1.59 to 1.76 inches, and in breadth from 1.17 to 1.23.

GENUS **DAPTION**, STEPHENS.

Daption, STEPHENS, Shaw's Gen. Zool. XIII. 1825, 239 (type, *Procellaria capensis*, LINN.).

CHAR. Size medium; bill shorter than the tarsus, depressed, its lateral outlines somewhat convex, the mandibular rami widely separated and bowed outward, the intervening space occupied by a naked, somewhat distensible skin; nasal case about three fourths as long as the unguis, depressed, except anteriorly, its upper outline gently but decidedly concave; separated from the unguis by a space equal to about two thirds the length of the case. Plumage spotted with white and dusky above, immaculate white below.

A single species, the well-known "Cape Pigeon," or "Pintado," constitutes this very distinct genus.

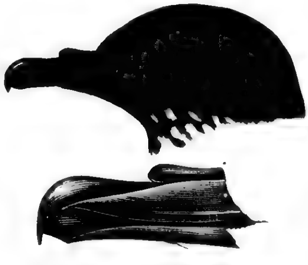
Daption capensis.

THE PINTADO PETREL; CAPE PIGEON.

Procellaria capensis, LINN. S. N. ed. 10, I. 1758, 132; ed. 12, I. 1766, 213.
Daption capensis, STEPHENS, Shaw's Gen. Zool. XIII. 1825, 241. — BONAP. Consp. II. 1856, 188. — LAWR. in Baird's B. N. Am. 1858, 828. — BAIRD, Cat. N. Am. B. 1859, no. 639. — COUES, Pr. Ac. Nat. Sci. Philad. 1866, 162; Key, 1872, 328; Check List, 1873, no. 584. — RIDGW. Nom. N. Am. B. 1881, no. 719.
Daptium capense, COUES, 2d Check List, 1882, no. 818.
Procellaria nævia, BRISS. Orn. VI. 1760, 146, no. 3.
Procellaria punctata, ELLMAN, Zool. 1861, 7473.

HAB. Oceans of the southern hemisphere; accidental on coast of California?

SP. CHAR. *Adult:* Lower parts (except sides of throat and chin), rump, upper tail-coverts, basal two thirds of the tail, the greater portion of the scapulars and secondaries, white; the back, rump, upper tail-coverts, and scapulars marked with deltoid spots of dark sooty plumbeous. Head and neck (except middle of the throat), uniform dark sooty plumbeous; wings chiefly sooty plumbeous, the inner primary coverts and inner webs of the primaries chiefly white, and the coverts, with much white at their bases, chiefly concealed; terminal third of the tail uniform sooty plumbeous, forming a wide, sharply defined terminal zone. Bill uniform deep black; legs and feet dusky in the dried skin, the inner and middle toes apparently varied with flesh-color or yellowish in life.



Wing, 10.25–11.00 inches; culmen, about 1.25; tarsus, 1.75; middle toe, 1.85.

The Pintado Petrel is, without much doubt, entirely accidental on the Pacific coast, if it occurs there at all, and its usual residence is the South Pacific, South Atlantic oceans, and the Antarctic seas. It was added to our fauna by Mr. George

N. Lawrence, in 1853, on the strength of a single specimen said to have been obtained on the coast of California, and now in the cabinet of that gentleman. Numerous specimens were obtained by the naturalists connected with the Wilkes Exploring Expedition, and its presence, at various places visited by their vessels, is noted in the Journal of Dr. Pickering. He first observed it on the 19th day of January, 1839, in latitude 39° south, in the Atlantic Ocean. It is subsequently mentioned by him at various points, and for the last time on the 14th of July, the same year, on the western coast of South America, the day after sailing from the harbor of Callao, in about 12° south latitude.

Mr. E. L. Layard, in his account of the sea-birds observed by him during a voyage in the Antarctic Sea, makes repeated mention of this species, which he first observed soon after leaving Capetown, August 15. He speaks particularly of its habit of alighting on the water. Between latitudes 37° and 41° south he mentions it as being very abundant, so that many were caught by letting a strong thread trail with a cork at the end of it. The birds fouled the line, which became entangled with their wings, rendering them helpless. As soon as one was thus entangled it fell into the water, and the rest immediately clustered around it.

This bird dives readily, dropping suddenly into the water, and instantly disappearing. It will also throw up its tail into the air in the manner of a Duck, and fish up bits of food from a slight depth. On the 16th of September, when running along the southern coast of Tasmania, this species was seen in vast numbers, there being frequently as many as two hundred of these birds around the vessel at one time. This Petrel is also included ("Ibis," 1862) in Mr. G. R. Gray's List of the Birds of New Zealand and of the Adjacent Islands.

Captain Hutton ("Ibis," 1865) states that the "Cape Pigeon" — as it is also called by the sailors — when caught and hauled upon the deck of a vessel, throws up from its mouth or ejects from its nostrils, like the rest of its family, a quantity of reddish, strongly offensive oil. This it does not for purposes of defence, but apparently from fright. It is never known, in moments of irritation, to eject an oily fluid from its nostrils in the manner described by Mr. Gould. When placed on deck it is unable to rise directly, but runs along with outstretched wings.

Its cry resembles the sound produced by drawing a piece of iron across a large toothed comb, and may be represented nearly by the syllables *cac-cac-cac-cac-cac.*

The breeding-place of this species was not positively known until quite recently. Gould states that it breeds in Tristan d'Acunha; but this is disputed by Captain Hutton. Darwin was informed that it resorts to the islands of South Georgia. It was not found on the Prince Edward's Islands, nor on Kerguelen Island. Sir J. Ross saw large flocks of young birds of this species in January, 1841, in lat. 71° 50′ S., near South Victoria. It seems, therefore, probable that this Petrel breeds in islands in the Antarctic Ocean. According to Captain Hutton, its usual northern limit appears to be lat. 27° S., although in one instance it was seen as far as 17° S. It was most readily caught by a thread attached to a bit of wood, with which the bird in flying becomes entangled. The power of flight of this species seems almost without any limit. Lieutenant Weld, R. N., informed Captain Hutton that a Cape Pigeon, with a piece of red ribbon around its neck, once followed the ship on board of which he was for more than fifteen hundred miles.

Captain Hutton mentions, in a subsequent voyage, his meeting with this bird, April 19, in southern latitude; but it did not become common until the 26th. From this he infers that it does not return from its breeding-grounds until the end of April. He was informed by a sailor that on a voyage to Australia, where he arrived about the middle of March, he did not see one of these birds. The same man once took seven of this species alive, and released them in the English Channel. They had been kept in a large tub, and fed with soft pork.

Mr. Layard mentions meeting with this bird, in November, in his voyage from England to Capetown, in lat. 3° 2′ N. Neither he nor any one of the officers of the ship had ever before seen it so far to the north.

Captain Hutton, in a subsequent reference to this species ("Ibis," 1871), mentions his finding it common on the Chatham Islands — a group lying five hundred miles east of New Zealand.

Mr. R. M. Sperling gives as the northern range of this species from 27° to 25° S., on the western coast of Africa, and from 26° to 25° on the eastern, and 24° on the eastern coast of South America. Captain P. R. King ("Proc. Zool. Soc.," 1834) writes that on his voyage from the meridian of the Island of Tristan d'Acunha to that of the Island of St. Paul, in about 40° south latitude, he was daily surrounded by a multitude of oceanic birds of the Petrel tribe, this species being the most abundant.

GENUS **HALOCYPTENA**, COUES.

Halocyptena, COUES, Pr. Ac. Nat. Sci. Philad. March, 1864, 78 (type, *H. microsoma*, COUES).

CHAR. Size very small; tail a little more than half as long as the wing, graduated; tarsus a little longer than the middle toe and claw (not quite twice the culmen); plumage uniform dusky.

This genus embraces but a single species, *H. microsoma*, COUES, which is, with one exception, the smallest of the family.

Halocyptena microsoma.

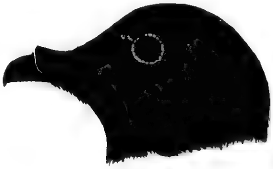
WEDGE-TAILED PETREL; LEAST PETREL.

Halocyptena microsoma, COUES, Pr. Ac. Nat. Sci. Philad. March, 1864, 79 (Lower California); Key, 1872, 328; Check List, 1873, no. 586; ed. 2, 1882, no. 821. — RIDGW. Nom. N. Am. B. 1881, no. 720.

HAB. Coast of Lower California.

SP. CHAR. *Adult:* Fuliginous-black, lighter and more brown on the lower parts, middle and greater wing-coverts, and anterior portion of the head. Bill and feet uniform black.

Wing, 4.80 inches; tail, 2.50, its graduation, .40; culmen, .45; tarsus, .85; middle toe, .60.



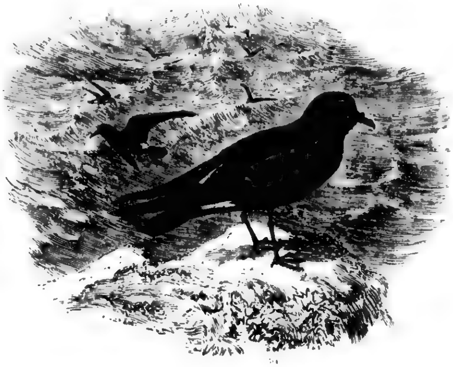
I have no information in regard to the general habits of this species, nor am I aware that the extent of its distribution is known. It is assigned to the Pacific fauna of North America in consideration of the capture of a single example, taken in May, 1861, near San Jose del Cabo, in Lower California. This specimen, an adult female, is in the collection of the Smithsonian Institution (No. 11420).

GENUS **PROCELLARIA**, LINNÆUS.

Procellaria, LINN. S. N. ed. 10, I. 1758, 131; ed. 12, I. 1766, 212; (type, *P. pelagica*, LINN.).
Hydrobates, BOIE, Isis, 1822, 562 (part; same type).
Thalassidroma, VIG. Zool. Journ. II. 1825, 105 (same type).

CHAR. Size very small; tail about half the wing, even, or very slightly rounded; tarsus a little longer than the middle toe and claw (about twice as long as the culmen); plumage dusky, with a white rump-patch.

Although composed of several distinct species, the genus *Procellaria* has but one representative in North America.



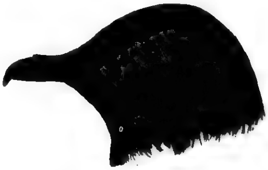
P. pelagica.

Procellaria pelagica.[1]

THE STORMY PETREL; MOTHER CAREY'S CHICKEN.

Procellaria pelagica, LINN. S. N. ed. 10, I. 1758, 131; ed. 12, I. 1766, 212. — BONAP. Consp. I. 1856, 196. — COUES, Pr. Ac. Nat. Sci. Philad. 1864, 80; Key, 1872, 328; Check List, 1873, no. 587; ed. 2, 1882, no. 822. — RIDGW. Nom. N. Am. B. 1881, no. 721.
Thalassidroma pelagica, VIG. Zool. Journ. II. 1825, 405. — NUTT. Man. II. 1834, 327. — AUD. Orn. Biog. IV. 1838, 310; B. Am. VII. 1844, 228, pl. 461. — LAWR. in Baird's B. N. Am. 1858, 831. — BAIRD, Cat. N. Am. B. 1859, no. 645.

HAB. North Atlantic Ocean, south to the Newfoundland Banks.



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[1] The following names are said to belong here or to very closely allied species or races: —
Procellaria lugubris, NATTERER, Act. Ital. Med. 1844, —. — COUES, Pr. Ac. Nat. Sci. Philad. 1864, 80.
Procellaria melitensis, SCHEMBRI, Cat. Orn. del Grupp. di Malta, 1843, 118. — COUES, Pr. Ac. Nat. Sci. Philad. 1864, 81.

Sp. Char. *Adult:* Above, sooty-black or dusky-fuliginous, the upper tail-coverts, except the ends of the longer feathers, with the sides of the crissum, white. Lower parts, with anterior portion of the head, grayish-fuliginous. Bill deep black; feet blackish, the legs sometimes more brown.

Wing, 4.50–4.90 inches; tail, 2.40–2.60; culmen, .40–.45; tarsus, .90; middle toe, .60–.65.

The Least Petrel — supposed to be the original "Mother Carey's Chicken" of the sailors — appears to be an exclusively Atlantic species. Common nearly all the year in various portions of the Northern Atlantic, it is rarely found near the land, or only when breeding, or during the prevalence of severe storms. At certain seasons of the year, especially during the latter part of summer, it is found just outside of the coast of Maine and Nova Scotia, and in the Bay of Fundy. So far as I am aware, it breeds only on different portions of the Atlantic coast of Europe and in the Mediterranean, and is not known to breed on any part of the American coast. It has also been met with on the eastern coast of Africa. It is found in Iceland; but, according to Professor Newton, it is evidently of infrequent occurrence there. It is more common on the Faröe Islands during the breeding-season, its principal stations being the northern islands of Fugloe and Naalsoe, near Thorslaon. Small flocks are seen in autumn on the coast of Norway, and occasional stragglers are driven into the fiords. It has not been found breeding on the Scandinavian coasts. It is occasionally seen near the coast of Sweden, but is not known to occur in any part of Finland. It is quite common in the breeding-season on the coast of Scotland, and breeds in considerable numbers on several of the islands, being met with more or less abundantly in all three groups of the western and northern islands, in Skye, Staffa, Iona, etc. It is common in the Hebrides, and its breeding-places are numerous around most of the larger islands of that group. Its most southern breeding-place on the coast of Scotland is Ailsa Craig. It also breeds on certain parts of the coast of England and of Ireland — as off the Isle of Man, Lundy Island, the Scilly Islands, the Channel Islands, and many other islets.

Mr. T. L. Powys met with it in the Ionian Sea, near Pagania, in December, 1857. Mr. C. A. Wright ("Ibis," 1864) mentions finding it resident all the year about Malta, and very common on the south side of the island; breeding also on the neighboring Island of Filfola, where he found it laying a single white egg, without any nest.

Mr. A. G. More speaks of having found it breeding on the Scilly Islands, on Iona, Staffa, in Skye, and in all the several groups of the western and northern islands. Sir William Jardine is quoted as having seen it apparently breeding on the Isle of Man.

Captain Sperling ("Ibis," 1868) states that he met with it on the eastern coast of Africa, where, between the latitudes of Zambesi and Zanzibar, it appears to replace the *melanogaster.* The mouth of the Zambesi nearly marks its most southern range in that region.

Mr. Howard Saunders ("Ibis," 1871) states that it, or a variety of it, breeds in great abundance on the Hormigas, Isla Grossa, and other islands just outside the entrance to the Mar Menor.

In other parts of Europe, in the interior, stragglers of this species have been met with; but in all instances their appearance has been fortuitous, and owing to their inability to resist the violence of storms. In this way specimens have been obtained in Denmark, North Germany, Belgium, Holland, etc.

This bird is said also to breed on islands on the coast of Brittany, on others near Marseilles, on the small islands near Sardinia, and in various other localities, both on the Atlantic coast and in the Mediterranean Sea. It is also resident on and about the coast of Northwestern Africa — breeding on rocky islets on the coast of Algeria, where Major Locke found it nesting from the beginning of May till September, and where young birds were found from the end of May until October. It has also been taken on the Canaries, at Madeira, at Fantee in Walfisch Bay, and in other places on the southwest coast of Africa.

Mr. George A. Boardman informs me that this species occurs during the latter part of the summer — more especially in August — off the coast of Eastern Maine, Southern New Brunswick, and along the entire Atlantic coast of Nova Scotia. It is also found off the coast of Newfoundland at the same time. Audubon mentions that in August, 1830, when becalmed on the Banks of Newfoundland, he obtained several individuals of this species. In their general manner, while feeding and moving around his boat, he noticed no points in which they differed from the Wilson's and the Leach's Petrels, in whose company he found them.

We learn from an interesting sketch given by Mr. Hewitson, in his British Oology, that on an excursion through the Shetland Islands he found this bird breeding on several of the small islets in the Bay of Scalloway. These he visited on the 31st of May, in hopes of finding the eggs; but in this he was disappointed. The "Swallows," as the fishermen called them, had not yet "come up from the sea." June 16, and the three following days, he was at Foxla, but was then equally unsuccessful. The birds had arrived, although they had not yet begun laying their eggs; but numbers were already in their holes, and were easily caught; and two of them were kept alive in his room for several days. During the day they were mostly inactive; and after pacing about the floor, and poking their heads into every hole, they hid themselves between the feet of the table and the wall. He could not prevail upon them to eat anything. Their manner of walking is described as being graceful and easy, but differing from that of every other bird he had seen — this Petrel carrying its body so far forward and so nearly in a straight line, as to have the appearance of being out of equilibrium. In the evening, toward sunset, the captives left their hiding place, and for hours never ceased in their endeavors to regain their liberty — flying round the room, or fluttering against the windows. In flying, their length of wing and white rumps gave them the appearance of the European House Martin.

On the 30th of June Mr. Hewitson again visited Oxna, and found these birds only just beginning to lay. In Foxla they were breeding in the holes in the cliffs, at a great height above the sea. In Oxna, they go down under the stones with which the beach is lined, to a distance of three or four feet, or more, according to the depth to which the stones are sunk, and beneath these they deposit their eggs. On walking over the surface he could hear the birds very distinctly singing, in a sort of warbling chatter a good deal like that of Swallows, but in a harsher tone. By listening attentively he was readily guided to their retreats; and by lifting out the stones he seldom failed of capturing the birds on their nests. These latter were constructed of much the same material as that of the ground on which they were placed, and seemed to have been made with care ; small bits of stalks of plants and pieces of hard dry earth were chiefly used. This Petrel never lays more than one egg. During the daytime these birds remain within their holes, and are then seldom heard. Toward night they become extremely querulous, and issue forth in great numbers, spreading far over the surface of the sea, and surround the fishermen, who attract them by throwing bits of fish overboard. The egg is described as measuring 1.13 inches in length and .80 in breadth, and as being of nearly the same size at both ends, thick-shelled, pure white, with numerous minute dots of dull red at the larger end, in a circular band.

According to Macgillivray, this bird has the same habit as Leach's Petrel, of ejecting, when handled, a quantity of pure oil, which is carefully preserved by the fowlers. This Petrel may be kept alive in confinement by smearing its breast with oil, which it will suck from the feathers, drawing each feather singly through each mandible.

This Petrel is often met with far out at sea; and will follow vessels for the sake of shelter as well as for food. When the latter is thrown to them they will very gracefully hover over the surface of the water with upraised wings, presenting very much of the appearance and movements of a large butterfly hovering over a flower. In this manner they pick up whatever is thrown to them, feeding on any fatty substance, small crustaceans, minute fishes, and almost any refuse.

Mr. Macgillivray thus describes the movements of these Petrels in a storm: "When the waves are high and the wind fierce, it is pleasant, even midst the noise of the storm and the heaving of the vessel, to watch the little creatures as they advance against the gale, at the height of scarcely a foot above the surface of the water, which they follow in all its undulations — mounting to the top of the wave, there quivering in the blast, and making good their way by repeated strokes of their long narrow wings; then sliding down the slope, resting a moment in the advancing mass of water, gliding up its side, and again meeting on its summit the force of the rude wind that scatters abroad its foam-bells. I have seen them thus advancing, apparently with little labor; and in such cases less effort must be required than when they have to encounter a gale before it has blown long enough to raise the waves, which afford them partial shelter."

Mr. Robert Gray states that in the Island of Soa he found this species having its holes in the soft earth. The entrances were about as large as rabbit-burrows. From these, other smaller galleries branch off, so that one external aperture serves as a kind of lobby for a number of pairs.

GENUS **CYMOCHOREA**, COUES.

Thalassidroma, BP. Comp. List, 1838, 64 (part; not of VIGORS).
Cymochorea, COUES, Pr. Ac. Nat. Sci. Philad. March, 1864, 75 (type, *Procellaria leucorhoa*, VIEILL).

CHAR. Size small, but larger than the preceding genera; tail much more than half the wings, forked, the feathers very broad at the ends; tarsus scarcely longer than the middle toe and claw (about one and a half times as long as the culmen); plumage dusky, with or without a white rump-patch.

The following species belong to the North American fauna, and are the only ones known: —

A. A white rump-patch.

1. **C. leucorhoa.** Uniform dusky, more fuliginous below; upper tail-coverts white, usually mixed with grayish. Wing, 6.00–6.30 inches; tail, 3.50–4.00, forked for .80–.90; culmen, .60–.65; tarsus, .90–.95; middle toe, .80–.85. *Hab.* Northern Atlantic and Pacific oceans.
2. **C. cryptoleucura.**[1] Uniform fuliginous, the head and upper parts more slaty, greater wing-coverts and tertials paler, inclining to dull grayish; remiges and rectrices dull black, the latter (except middle pair) white at base; upper tail-coverts white, the longer broadly tipped with black (as in *Procellaria pelagica*). Bill, legs, and feet (including webs) black. Wing, 5.80–6.30 inches; tail, 3.00–3.15, forked for .20–.30; culmen, .60; tarsus, .85–.90; middle toe (with claw), .85–.90. *Hab.* Sandwich Islands.

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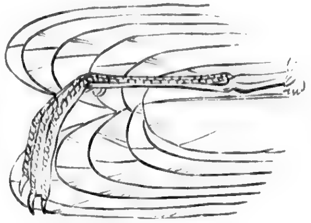
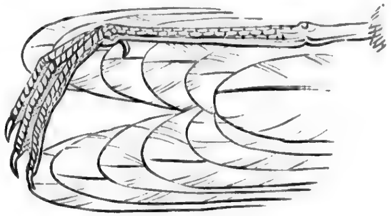
[1] *Cymochorea cryptoleucura*, RIDGW. Proc. U. S. Nat. Mus. Vol. 4, 1882, 337 (types in Nat. Mus. Coll.).

B. No white on the rump.

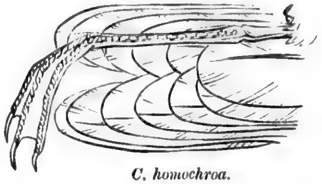
3. **C. melania.** Uniform fuliginous-dusky, lighter and browner beneath, the greater wing-coverts and outer webs of tertials light grayish brown. Wing, 6.80 inches; tail, 3.90, forked for 1.20; culmen, .60; tarsus, 1.20; middle toe, 1.00. *Hab.* South Pacific Ocean, north to Lower California.
4. **C. homochroa.** Smoky plumbeous, the wing-coverts lighter and more brown, remiges and tail dusky, rump and upper tail-coverts ashy plumbeous. Wing, 5.30–5.40 inches; tail, 3.30–3.50, forked for .70–.90; culmen, .50–.55; tarsus, .80–.90; middle toe, .75–.80. *Hab.* Farallone Islands, coast of California.



C. leucorhoa.



C. melania.



C. homochroa.

Cymochorea leucorhoa.

LEACH'S PETREL.

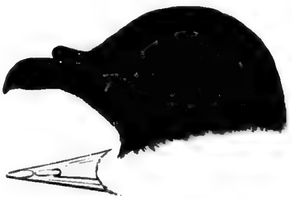
Procellaria leucorhoa, VIEILL. Nouv. Dict. XXV. 1817, 422.

Cymochorea leucorrhoa, COUES, Pr. Ac. Nat. Sci. Philad. 1864, 76; Key, 1872, 329; Check List, 1873, no. 588; ed. 2, 1882, no. 823. — RIDGW. Nom. N. Am. B. 1881, no. 723.

Procellaria Leachii, TEMM. Man. II. 1820, 812.

Thalassidroma Leachii, BONAP. Synop. 1828, no. 309; Consp. II. 1856, 193. — NUTT. Man. II. 1834, 326. — AUD. Orn. Biog. III. 1835, 424; B. Am. VII. 1844, 219, pl. 459. — LAWRENCE, in Baird's B. N. Am. 1858, 830. — BAIRD, Cat. N. Am. B. 1859, no. 642.

Procellaria Bullockii, FLEMING, Brit. An. 1828, 136, no. 219.



HAB. North Atlantic and Pacific oceans, south to Virginia (Petersburg, Va., and Potomac River, near Washington, D. C. !), and Aleutian Islands; breeds from the coast of Maine northward.

Sp. Char. *Adult:* Sooty plumbeous, the head and neck clearer plumbeous, the former lighter anteriorly; lower parts decidedly fuliginous; middle and greater wing-coverts light smoky gray; remiges and tail nearly black; upper tail-coverts white, usually more or less clouded with sooty gray. Bill deep black; iris dark brown; legs and feet entirely dusky. *Downy young:* Covered with a very fluffy down of a uniform smoky gray color, the anterior half of the head almost naked.

Wing, 6.00–6.30 inches; tail, 3.50–4.00, the depth of the fork, .80–.90; culmen, .60–.65; tarsus, .90–.95; middle toe, .80–.85.

Leach's Fork-tailed Petrel — the common Mother Carey's Chicken of the Northern and Eastern New England coast — has a very extended distribution, but few birds of this family having a wider range than this. During the months of May, June, and July, and a part of August, it is found breeding in high northern latitudes in Europe, Eastern and Western North America, and probably in Eastern Asia, in all instances on the sea-coast, and never in the interior. During the remainder of the year it wanders over a large portion of the watery surface of the globe.

On the Atlantic coast of North America it breeds from the Casco Bay and the southern coast of Maine to Greenland. It breeds also in the Hebrides, and on other islands north of Scotland, but is not mentioned as breeding in Iceland, on the Faröe Islands, or in any portion of Scandinavia; and although Nilsson includes it among the birds of that region, it is only an accidental visitor there. It is mentioned by Yarrell as occurring in Great Britain, but is not referred to by him as breeding in any portion of the kingdom. The first specimen known to have been obtained was taken at St. Kilda, in the summer of 1818, by Mr. Bullock, and this is now in the British Museum. Other specimens were obtained in France, and preserved as great rarities. After the violent storms which occurred in the autumns of 1823, 1825, and 1831, several specimens were procured. It has since been taken on several occasions in various parts of Ireland, and in nearly every maritime county of England. Those captured are usually exhausted for want of food, and if secured alive die soon afterward. This species is mentioned by Professor Blasius as one of the birds which visit the shores of Heligoland.

Mr. A. G. More ("Ibis," 1865) states that the only breeding-place of this species known to exist within the British Islands is St. Kilda, one of the Outer Hebrides. Mr. J. H. Dunn mentions that it formerly nested within the Orkneys; and it is given by Mr. Dunbar in his List of the Birds of Ross-shire. Captain Elwes, who visited the Hebrides at a later date, mentions ("Ibis," 1869) finding this Petrel, in company with *Procellaria pelagica*, breeding on Mirigatay, a small islet near St. Kilda. He did not procure any of the eggs, but he had no doubt whatever that the birds were either actually breeding, or preparing so to do, in the dry peat on the tops of the cliffs.

According to Reinhardt, this Petrel is a common resident species of Greenland, breeding in all favorable localities from that region southward to the coast of Maine. The most southern and western point on which I have found it breeding is Damariscotta Island, a few miles east of the Kennebec; but it has been taken breeding on islands near Portland. Except during the breeding-season it is rare on the New England coast, and is only known in Massachusetts when driven inland by violent easterly storms. Giraud states that this species is of very rare occurrence on the coast of Long Island. He quotes a letter from Professor Baird in reference to the appearance of a large number of these birds inland, after the violent gale of August, 1842. Six or more specimens were procured in the neighborhood of Washington. Others were killed in the vicinity of Petersburg, Va., and at other points, hundreds of miles from the open sea. One was picked up near Springfield, Mass., nearly a hundred miles from the Atlantic.

Mr. Dall, in his paper on the Birds of the Eastern Aleutian Islands, states that though this species was often seen in the region south of lat. 50° N., it was not noticed by him in the region east of Unalashka. In his subsequent paper upon the Western Aleutians, he further states that though not noticed east of Amchitka, this bird breeds abundantly on the rocky islets off Atta and on the highlands of Kyska and Amchitka. As is also noticed in regard to the habits of *O. furcata*, the male seems to do a large proportion of the incubation. As a rule, the female was found to lay only one white egg, in a burrow from six inches to a foot in horizontal length. This burrow was usually in the side of a turfy bank, and often curved considerably to one side; and he never met with one absolutely straight. When handled, this bird disgorges a reddish oily fluid of a strong and disagreeable musky smell; and if the burrow was tenanted, this could be easily recognized by its smell. On the coast of Mendocino Co., Cal., this bird is known as the "Musk Bird." While breeding it is largely nocturnal in its habits. Fresh eggs were found from June 10th to the end of July. The specimens of this bird taken on the Western Aleutians are said to be darker than those from Sitka. They are summer residents only, going south in winter, and arriving at the islands in May. It was found abundant at Sitka by Bischoff, the specimens taken being more rusty-colored than is usual with birds of this species.

The appearance of Leach's Petrel in different parts of Europe has been found in all instances to have been caused by severe storms, the birds, exhausted by inability to procure food, and overpowered by the wind, having been dashed upon the shore, or even driven far into the interior. Since attention has been drawn to the subject, the records of their appearance in this manner in England, France, Portugal, and other places have become more frequent. Dr. L. von Schrenck obtained examples of this species at the Kurile Islands, and Mr. Wosnessensky procured others on the Island of Schauschu.

In the summers of 1850 and 1851 I found this species breeding on a number of small islands in the Bay of Fundy, on the coast of New Brunswick; and since then Dr. Bryant has several times met with it, also breeding in large numbers, on the low islands on the opposite shore of Nova Scotia. I first noticed it at sea, off the coast of Maine, about the middle of June, 1850. Our steamer had been overtaken by a violent northeasterly gale, and for eight hours was unable to make any headway. The sea had been lashed by the tempest into a violent commotion, and the Petrels were about in countless numbers, and seemed to be totally unmindful of the storm. They flew singly, and in no instance did I see two together. I was doubtful whether they succeeded in procuring any food; yet they appeared to be very busy, and wherever a wave broke and its crest descended in foam, the Petrel might be seen skimming its surface. Whether the sea was full of Petrels, as it appeared to be, or whether the same birds were constantly reappearing, it was impossible to tell; but not more than three or four were in sight at any one moment. I first found this species breeding on Great Duck Island, a large and inhabited island near Grand Menan, a considerable portion of which was covered by a thick growth of spruce and birch trees. The birds nested in holes among the thick network of roots, where they were nearly inaccessible. It was only with the aid of an axe and with considerable hard work that we could get to their retreats. Although it was already the 24th of June, in only one of the nests we opened was there an egg, the male bird being present; in all the other nests both birds were found, but no egg. I have since observed that during the daytime, except when the weather is lowering, the pair may always, preceding the deposition of the egg, be found in their hole. In all instances we were guided to the nest by its strong odor; otherwise it would have been impossible to distinguish which among the many hollows between the roots of the trees were thus made use of. Here, as the birds could not make any excavations, we found the nests very shallow, not more than fifteen inches in depth; there was, in fact, no proper nest, and the egg was lying on the bare soil.

The following summer I visited the Green Islands and other small islands lower down the Bay. All of these were bare of trees, and were covered with grass, and the surface consisted of soft black mould, easily penetrated. Here the whole surface of the islands, where this favorable soil was found, was honeycombed with the burrows of this Petrel. These were winding, and turned in various directions. Several after winding a few inches below the grass-roots, to the extent longitudinally of thirty inches, would again descend about four inches more, and then turn directly back toward the opening, making the excavation directly under the first, and the terminus or nest-place would be about ten inches below, and directly under, the entrance. In all there would be fully sixty inches of devious passage to reach the nest. In every instance we found the male bird alone, sitting upon the solitary egg. The female was not to be seen. The inference seems to be, that after the deposition of the egg the duties of incubation — certainly during the daytime — are performed by the male. Whether the female supplies him with food or takes his place at night-time, I am not able to state. Mr. H. B. W. Milner, as quoted by Mr. Dresser, mentions being drawn to the nest of this bird by its twittering notes, which are said to resemble those of the European Swallow. In no instance that I can recall did these birds utter a sound, not even when taken in the hand.

When their retreat was uncovered, they made no effort to escape; and the only indication of being annoyed which they gave was the ejecting, sometimes with considerable force, through their nostrils of a strong, pungent, musky oil, of a reddish-yellow color, the odor of which was very disagreeable, scenting woollen cloth for several days when thrown upon it. In one instance this oil was squirted directly into both the eyes of one of my companions, producing temporary blindness and sharp pains. A thorough ablution in sea-water, however, soon gave complete relief.

The tenacity of life possessed by this species is remarkable. One of my specimens, supposed to be dead, was closely wrapped in paper, stowed away in my trunk, and not taken out for nearly a week. It proved to have remained alive, and on being released and thrown up into the air, it flew away.

On the ground this bird is nearly helpless, and can rise on the wing only with the greatest difficulty. At first it appears to be unable to stand, but rests on the ground, its feet bent under its body. If undisturbed it partially raises itself, appears to run forward, partly on its toes, and partly by aid of its wings, and rises very gradually, not flying with any degree of speed until it has attained a height of several feet above the ground. This bird is nocturnal in its habits, keeping close during the day, except in very cloudy weather. At night it could be heard in all directions, both over the water and over the land. Arriving late one night at the wharf of Duck Island, the effect produced by these birds flying backward and forward, and all uttering their sad twittering notes, was almost startling, and strongly suggestive of unearthly sights and sounds.

The young when first hatched are covered with long loose down, neither wings nor bill being visible, and they resemble some nondescript quadruped rather than a bird in the down.

The egg — and there is never more than one — is oval in shape, but slightly more pointed at one end than at the other; the color is a dull or creamy white. Around the larger circumference is a faint ring, almost always apparent, of fine reddish dottings. These eggs are quite fragile and delicate, and measure from 1.25 to 1.40 inches in length, and from .92 to .95 of an inch in their greatest breadth. The egg of this species is an almost exact miniature of that of *Diomedea exulans*.

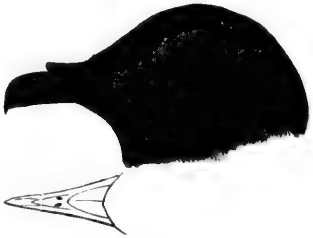
Cymochorea melania.

THE BLACK PETREL.

Procellaria melania, BONAP. Compt. Rend. XXVIII. 1854, 662.
Thalassidroma melania, BONAP. Consp. II. 1856, 196.
Cymochorea melania, COUES, Pr. Ac. Nat. Sci. Philad. 1864, 76; Key, 1872, 329; Check List, 1873, no. 589.
Cymochorea melæna, RIDGW. Nom. N. Am. B. 1881, no. 724. — COUES, 2d Check List, 1882, no. 824.

HAB. South Pacific Ocean, including the coast of Lower California.

SP. CHAR. *Adult:* Fuliginous-dusky, lighter and browner beneath; middle and greater wing-coverts and outer webs of tertials light grayish brown; remiges, larger scapulars, and tail, blackish dusky; upper tail-coverts fuliginous, like the back. Bill, legs, and feet, entirely black.



Length, about 7.50 inches; wing, 6.80; tail, 3.90, depth of its fork, 1.20; culmen, .60; tarsus, 1.20; middle toe, 1.00.

I can find no account of the general habits of this species, nor any indication of the area of its distribution or resort. It is said to be a visitor of the coasts of California, Oregon, and Washington Territory; but so far as can be ascertained, there is no positive evidence of the capture of a single specimen in that region; certainly not since 1854. Prince Bonaparte, in his Notes on the Birds collected by M. A. Delattse in his Voyage between Nicaragua and California, and in which he first describes this bird as a new species, assumes, apparently without any evidence, that it belongs to the Californian fauna, and expresses some surprise that it should have escaped previous explorers on that coast. That it should not since have been met with is a strong indication that it does not belong to our fauna.

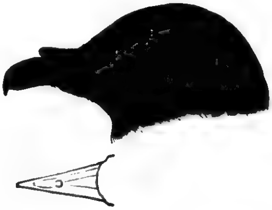
Cymochorea homochroa.

THE ASHY PETREL.

Cymochorea homochroa, COUES, Pr. Ac. Nat. Sci. Philad. March, 1864, 77 (Farallone Islands, coast of California); Key, 1872, 329; Check List, 1873, no. 590, ed. 2, 1582, no. 825. — RIDGW. Nom. N. Am. B. 1881, no. 725.
Thalassidroma melania, LAWR. in Baird's B. N. Am. 1858, 830 (not of BONAP. 1857). — BAIRD, Cat. N. Am. B. 1859, no. 643.

Hab. Farallon Islands, coast of California.

Sp. Char. *Adult:* Smoky plumbeous, the wing-coverts lighter and more brown, the remiges and tail dusky; rump and upper tail-coverts ashy plumbeous; anterior portion of the head inclining to ashy. Bill deep black; legs and feet brownish black.

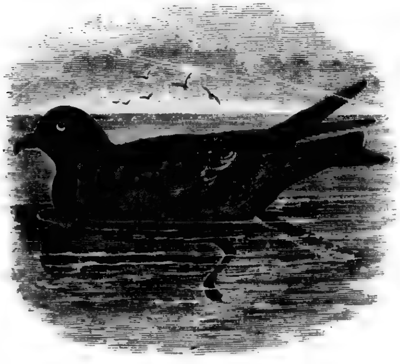


Wing, 5.30–5.40 inches; tail, 3.30–3.50, depth of its fork, .70–.90; culmen, .50–.55; tarsus, .80–.90; middle toe, .75–.80.

This has been one of the species doubtfully attributed to the Californian coast, the occurrence of which has only recently received verification. It had not been met with there by Dr. Cooper, and until identified by Mr. Henshaw, there was no satisfactory evidence in support of its claim to a place in the fauna of North America. But little is known as to its habits, its distribution, or the places to which it resorts for breeding. Mr. Henshaw states that Petrels appear to be quite numerous along the entire coast of California. He received an example of this species from Captain Forney, who had procured it on San Miguel, where it was said to be breeding in great numbers. As usual with this family, it was nesting in burrows.

Genus **OCEANODROMA**, Reichenbach.

Oceanodroma, Reichenb. Av. Syst. 1852, p. iv (type, *Procellaria furcata*, Gmel.).



O. furcata.

Char. Size of *Cymochorea;* tail more than half as long as the wing, forked, the feathers narrowed and scalloped out toward ends; tarsus scarcely longer than the middle toe and claw (less than twice the culmen); plumage ashy, with or without white collar and lower parts.

Two species of this genus are known, distinguished by the following characters: —

1. **O. furcata.** Bluish ashy, the orbital region and wings (except greater coverts) dusky. *Hab.* North Pacific.
2. **O. Hornbyi.** Forehead, cheeks, nuchal collar, and lower parts white; quills black; rest of plumage dark gray, including a jugular band. *Hab.* North Pacific.

Oceanodroma furcata.

THE FORK-TAILED PETREL.

Procellaria furcata, GMEL. S. N. I. ii. 1788, 561.

Thalassidroma furcata, GOULD, Voy. Sulphur, Birds, 1844, 50, pl. 33. — CASSIN, Illustr. B. Cal. Tex. etc. 1855, 274, pl. 47. — LAWR. in Baird's B. N. Am. 1858, 829. — BAIRD, Cat. N. Am. B. 1859, no. 640.

Oceanodroma furcata, BONAP. Consp. II. 1856, 194. — COUES, Pr. Ac. Nat. Sci. Philad. 1864, 74; Key, 1872, 329; Check List, 1873, no. 591; ed. 2, 1882, no. 826. — RIDGW. Nom. N. Am. B. 1881, no. 726.

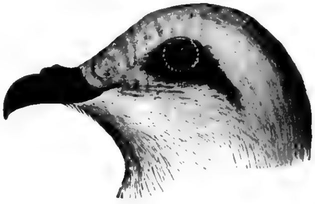
Procellaria orientalis, PALLAS, Zoog. Rosso-As. II. 1826, 315.

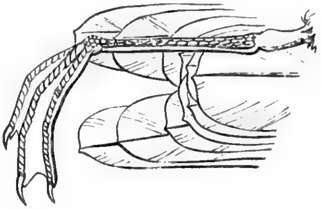
"*Thalassidroma cinerea*, GOULD." (BONAP.)

Thalassidroma plumbea, PEALE, Zool. Expl. Exp. Birds, 1848, 292.

HAB. North Pacific Ocean, south to coast of Oregon.

SP. CHAR. *Adult:* Fine light cinereous, fading gradually to white on the chin and throat, anal region, and crissum; orbital region, longer scapulars, inner wing-coverts, anterior and outer lesser coverts, alulæ, primary coverts, and remiges grayish dusky; central lesser, middle, and inner greater coverts, and tertials broadly edged with ashy white. Lining of the wing clouded with grayish dusky and ashy white, the former predominating. Bill wholly deep black; iris dark brown; legs and feet dusky brown. *Younger:* Similar, but colors much more dingy, with little if any of a bluish cast.





Length, about 8.50 to 9.00 inches; extent, 18.25 to 19.00; wing, 5.95–6.40; tail, 3.75–4.00, forked for about 1.00; culmen, .55–.60; tarsus, 1.00–1.10; middle toe .90–95.

This species appears to be less of a wanderer than are most of its family, and to be exclusively an inhabitant of the Northern Pacific Ocean. It is an interesting addition to the fauna of the United States made by the naturalists in the Wilkes Exploring Expedition — having been previously known only as a bird of the Asiatic coast, of the islands of the North Pacific, and of Russian America. It was found in large numbers by this Expedition on the southern coast of Oregon.

This bird was first noticed by Pennant in his "Arctic Zoology," and called by him the "Fork-tailed Petrel." The only account given of it was, that it had been taken among the ice between Asia and America. Subsequently Pallas referred to it as an inhabitant of the coasts of Unalashka and the Kurile Islands.

We next find it mentioned in the Zoology of the Voyage of the "Sulphur," 1844, where it is said to have been taken at Sitka; although nothing is added in regard to its history.

Dr. Pickering, in his Journal, first records its occurrence at sea, on the 20th of April, 1840, the coast of Oregon being about two hundred miles distant. Three days later, when in sight of that coast, great numbers of this species were noticed flitting around in the track of the vessel, actively engaged in searching for particles of food thrown overboard. Generally they reminded him of Wilson's Petrel, but their wings seemed longer and their movements appeared to be more rapid; in fact, they appeared to resemble the larger *Procellariæ*. Occasionally this bird sailed in its flight; but during the greater part of the time it moved by very rapidly flexing its wings in the same manner as Wilson's Petrel. It proved to be not difficult to capture, and several specimens were taken with hook and line. The birds would dive a foot or two after the bait, and made use of their wings in and under the water, from which they evidently had not the difficulty in rising which is observable in the Albatross. Their power of swimming seemed rather feeble, yet they alighted in the water without any apparent hesitation. The dead body of one of their companions having been thrown overboard, the other birds clustered about it with as much avidity as around any other food. This bird uttered a faint cry when it was taken on board.

In addition to these notes of Dr. Pickering, Mr. Peale farther states that this species was observed in considerable numbers on the northwest coast of America, in the most northerly regions visited by the Expedition, but not farther south than the thirty-eighth degree of north latitude.

Dr. Cooper states that although he has never met with it on the coast of California, he has received a specimen obtained by Mr. E. Lorquin, of San Francisco, and shot by the latter at San Pedro in August.

Mr. Dall, in his Notes on the Avifauna of the Aleutian Islands, east of Unalashka, mentions that this bird, though not observed anywhere at sea, was found on the Chica Rocks, in the Akutan Pass, near Unalashka, breeding, June 2, 1872. The eye of this species is black. The nests were on the edge of a steep bank near the shore, and ten or twelve feet above it; and each structure was placed in a hole extending obliquely downward and backward from the face of the bank, and about a foot deep, at the bottom of which a little dry grass or fine roots were placed. In two instances the parent-bird was caught on the nest alive. Each nest contained only one small white egg, perfectly fresh — though others might have been laid afterward, had the bird not been disturbed.

Mr. Dall states, in his second paper on the Aleutian Islands, that the male of this species appears to do a large part of the work of incubation. This species, as well as Leach's Petrel, has the habit, when handled, of disgorging a reddish oily fluid of a strong and disagreeable musky smell; and one can tell by the odor of the burrow alone whether it is tenanted by a Petrel or by one of the *Alcidæ*. It was found by Mr. Dall breeding on all the less populated islands as far east as Unalashka. Unlike the reported habits of the North Atlantic Petrels, this species is never seen in stormy weather at sea, nor does it ever follow in a vessel's wake, so far as his observations go. It is occasionally seen flying about in calm, fine weather, throughout the North Pacific.

Eggs of this species in the Smithsonian Collection, obtained by Mr. Dall and by Mr. Bischoff at Sitka, Alaska (12854), are of a dirty chalky-white color, oval in shape, with rounded ends; and four present the following measurements: 1.35 by 1.00 inches; 1.30 by 1.00; 1.40 by 1.00; 1.35 by 1.00.

Oceanodroma Hornbyi.

HORNBY'S PETREL.

Thalassidroma Hornbyi, Gray, P. Z. S. 1853, 62. — Lawr. in Baird's B. N. Am. 1858, 829. — Baird, Cat. N. Am. B. 1859, no. 641.

Oceanodroma Hornbyi, Bonap. Consp. II. 1856, 195. — Coues, Pr. Ac. Nat. Sci. Philad. 1864, 75; Key, 1872, 329; Check List, 1873, no. 592; ed. 2, 1882, no. 827. — Ridgw. Nom. N. Am. B. 1881, no. 727.

Hab. North Pacific Ocean (coast of Alaska).

Sp. Char. *Adult:* "Front, cheeks, throat, collar round hind part of the neck, breast, and abdomen, pure white; crown, hind-head, a broad band in front of neck, bend of wing and lesser wing-coverts, sooty gray; upper part of back gray; lower part of back and tail ashy gray; greater wing-coverts brownish gray; tertiaries and quills deep black.

"Total length, 8¼″; bill from gape, 10½‴, from front, 8½‴; tail (outer feather), 3¾″; tarsus, 1″; middle toe, 1″" (Gray).

This rare species continues unknown to American collections.

This species was described by G. R. Gray, and the example from which its description was taken had been procured on the northwest coast of North America. In its general appearance and peculiarities it is said to correspond most nearly with *O. furcata*. We know nothing in regard to its specific habits or distribution. It has not been met with by any of the parties who have visited or explored the regions whence this species is said to have been obtained.

Genus OCEANITES, Keyserling and Blasius.

Oceanites, Keys. & Blas. Wirb. Eur. I. 1844, p. xciii (type, *Thalassidroma Wilsoni*, Bp., = *Procellaria oceanica*, Kuhl).

Char. Size very small; tail more than half the wing, forked, the feathers very broad at the ends; tarsus much longer than the middle toe and claw (about two and a half times as long as the culmen); plumage dusky, with a white rump-patch.

This genus is represented by a single species — the well-known Wilson's Stormy Petrel (*O. oceanicus*).

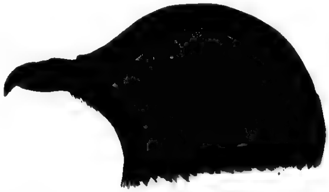
Oceanites oceanicus.

WILSON'S PETREL.

Procellaria pelagica, Wils. Am. Orn. VI. 1808, 90, pl. 60 (not of Linn.).
Procellaria oceanica, Kuhl, Beitr. Zool. 1820, Monog. Proc. 136, pl. 10, fig. 1.
Thalassidroma oceanica, Gray, Gen. B. III. 1849.
Oceanites oceanica, Coues, Pr. Ac. Nat. Sci. Philad. 1864, 82; Key, 1872, 329; Check List, 1873, no. 593. — Ridgw. Nom. N. Am. B. 1881, no. 722.
Oceanites oceanicus, Coues, 2d Check List, 1882, no. 828.
Thalassidroma Wilsoni, Bonap. Journ. Ac. Nat. Sci. Philad. III. 1823, 231, pl. 9. — Nutt. Man. II. 1834, 324. — Aud. Orn. Biog. III. 1835, 486; V. 1839, 645; B. Am. VII. 1844, 223, pl. 460. — Lawr. in Baird's B. N. Am. 1858, 831. — Baird, Cat. N. Am. B. 1859, no. 644.

Hab. Atlantic Ocean in general; Australian seas.

Sp. Char. *Adult:* Above, fuliginous-dusky, becoming black on the remiges and tail, and fading into light brownish gray on the outer surface of the greater coverts and secondaries. Upper tail-coverts (including their extreme tips) and sides of the crissum pure white. Lower parts plain fuliginous. Bill deep black; legs and feet black, the webs marked with an oblong central space of yellow.



Wing, 5.70–6.20 inches; tail, 3.00–3.25; culmen, .45–.50; tarsus, 1.30–1.35; middle toe, .95–1.00.

The species generally known in the books as Wilson's Petrel is emphatically a cosmopolite, and seems to be found very nearly over the whole watery expanse of the globe, in south latitude and in north latitude, and in regions so far remote as almost to warrant the conclusion that it must occur in the intervening spaces, and that the absence of evidence of its presence can by no means be held to be conclusive proof to the contrary. Its breeding-places have been, and to some extent remain, in doubt. It is especially common throughout the month of August — but at no other time, so far as I am aware — off the coast of North America from Newfoundland to New Jersey, and probably farther south. It keeps close to the shore, comes into the more open bays and harbors, and is readily attracted to the vicinity of vessels in quest of food. Eggs purporting to belong to this species, said to have been taken near Madeira, were received by Mr. Frere, of London.

According to Mr. Godman, this species is abundant and resident about the Azores, where its local name is *Alma de Mestre*. On his return from Flores to Fayal, being becalmed for several hours, and there being a great many Petrels flying about, Mr. Godman went out in a boat and shot several. They proved to be all of this species. In flying, these birds carried their legs stretched out behind them, and their feet protruding an inch beyond their tail — producing the effect of two long feathers. He could not ascertain with positive certainty that this species breeds in this group of islands, but as it is abundant there throughout the year, he has no doubt that this is the case.

Mr. E. L. Layard mentions meeting with it in the Southern Ocean in lat. 23° 30′ S., long. 72° E.; and subsequently, when in lat. 24° S., long. 75° 30′ E., he again met with it. When in lat. 32° 50′ S., long. 29° 50′ E., near the mouth of Great Fish River, these birds were most abundant; at least three hundred were in sight at one time. At no other time did he see so many together, except in his voyage out to Canada, in 1843, when they appeared off Anticosti in similar flocks. In his opinion these birds very rarely alight upon the water, for he repeatedly watched them far into the night, and still they kept on their unwearied flight; and even after the moon had set, and their tiny forms were no longer visible, he could distinguish their querulous cries.

Captain F. W. Hutton, in his voyage from London to New Zealand ("Ibis," 1867), states that he met with this species several times in the northern temperate zone, but saw none while in the tropics. It reappeared in lat. 33° S., and continued common until May 2, lat. 39° S. It was then seen occasionally until May 18, lat. 40° 40′ S., after which none were met with.

Mr. L. Kumlien in the Arctic expedition found it far more abundant than Leach's Petrel, and traced it as far north as Resolution Island. On the return voyage it was first met with a hundred miles south of Cape Farewell. It has been observed in the Pacific, and is given by Mr. Gould as a bird of Australia.

Dr. Pickering met with this species Oct. 24, 1838 (the latitude and longitude not given, but the nearest land was the coast of Africa), and a specimen was taken alive. It was found to be not only entirely incapable of perching, but even of standing upright, except by aid of its wings. It sat rather than stood, and the whole of the tarsus rested on the ground; and it walked in the same awkward position, being frequently obliged to balance itself with the aid of its wings, with a more powerful exertion of which it was enabled to run along on its toes, as it does on the surface of the water. Birds of this species continued abundant about the vessel for several days, and their coursing over the water with flitting wings reminded him of the movement of butterflies about a pool. Only in one instance was this bird seen to rest on the surface of the water. This Petrel does not sail in the continued manner of Gulls and other sea-birds, but moves by rapidly flexing its wings, somewhat after the manner of a Bat. It was continually coursing around and in the wake of the vessel, generally in considerable numbers, during the greater part of the time the expedition was in the Atlantic Ocean. It was taken in the Atlantic in lat. 35° S., and was seen occasionally as far as Cape Horn. In the Pacific it occurred at times until within a day's sail of Callao. Specimens were procured by the Expedition from various and widely remote localities.

It is often met with flying about the North Rock, Bermuda, in stormy weather; and Mr. Hurdis records the capture of a very fine specimen, shot by Mr. Harford on the 30th of June, 1853, killed some miles from shore, the date being suggestive of its breeding in that vicinity.

This species is not uncommon off Sandy Hook, within sight of land, and occasionally stragglers are seen coasting along the shores of Long Island. Mr. Giraud states that he had a favorable opportunity of observing the manners of these birds when he was making an excursion in a pilot-boat. The vessel being low, by throwing over small pieces of fat, which they seized with avidity, he was enabled to keep them very near. He observed that they were capable of a very rapid as well as a very protracted flight, at times shooting past the boat, which, under full sail, was moving at a very rapid rate, but which seemed, by comparison with the birds, to be lying at anchor. When wearied, this Petrel rests on the water; and at such times it stands with outspread wings, or runs upon its surface with facility and ease. The lightness of its body is rendered even more buoyant by the action of its wings. Its note, usually low and feeble, becomes louder and harsher during boisterous weather, and at such times is more frequently repeated.

Audubon was entirely mistaken in his supposition that this species breeds in the Mud Islands off the coast of Nova Scotia.

I have had frequent opportunities of observing it in the outer harbor of Boston, where it is generally present in abundance from the last week in July to the first week in September.

In the latter part of August, 1871, in company with Professor Baird, on the small Government steamer "Moccasin," when off the southern shore of Martha's Vineyard, we saw a large number of these birds. They were readily attracted about our craft by fragments of biscuit, scraps of meat, and almost any kind of food, and were evidently possessed of very keen vision; for while at first only an occasional bird was in sight, as soon as we began to throw out food they came flocking in from all directions, until we could count seventy or more of them. They hovered about the water, preparatory to seizing their scraps of food, in a manner that reminded us at once of the action of butterflies. The uplifted wings, the feet thrown forward as if patting the water, and then rising from it, the bill inclined forward and downward — all this recalled the movements of the butterfly, and seemed more like those of an insect than of a bird. It rarely, and only for a moment, rested on the water.

Dr. J. H. Kidder found this Petrel present about Kerguelen Island, and noted its crepuscular habits when near the shore. This species became much more common after its first appearance, December 8. He had previously met with it at sea east of the Cape of Good Hope, and, December 14, saw it about by day feeding on the oily matters floating away from the carcass of a sea-elephant. The birds frequented the rocky parts of the hillsides, flitting about like Swallows, apparently in pursuit of insects, though there seemed to be none flying on the island other than minute gnats. Dr. Kidder did not succeed in finding any eggs, but was informed that Rev. Mr. Eaton, of the English Expedition, found one on Thumb Mountain, some fifteen miles from the American station; there was only one on the nest, which had been made under a large rock not far from the beach. The egg, which was white, was found December 8; and Dr. Kidder had no doubt that this bird nests habitually among and under rocks, and at a considerable elevation above the sea.

Genus **CYMODROMA**, Ridgway.

Fregetta, Bonap. Consp. II. 1856, 197 (type, *Procellaria tropica*, Gould; not *Fregata*, Briss. 1760).

Char. Size small; inner toe about equal to or slightly longer than the middle, which is decidedly shorter than the outer; claws very broad and flat, somewhat <> shaped; tarsus nearly twice as long as the middle toe without the claw (about two and a half times as long as the culmen); tail more than half as long as the wing, even, the feathers extremely broad, and truncated at the tip; plumage party-colored.

Only one species of this very peculiar genus belongs to the North American fauna, and this on account of its accidental occurrence on the coast of Florida.

Cymodroma grallaria.

THE WHITE-BELLIED PETREL.

Procellaria grallaria, VIEILL. Nouv. Dict. XXVI. 1817, 418.

Fregetta grallaria, BONAP. Consp. II. 1856, 197. — COUES, Pr. Ac. Nat. Sci. Philad. 1864, 86; Key, 1872, 330; Check List, 1873, no. 594; ed. 2, 1882, no. 829. — RIDGW. Nom. N. Am. B. 1881, no. 728.

Procellaria fregatta, "BANKS," KUHL, Mon. Proc. 1820, 138, pl. 10, fig. 3 (not *P. fregata*, LINN. 1766.)

Thalassidroma fregetta, LAWR. Ann. Lyc. N. Y. 1851, 117.

Fregetta Laurencii, BONAP. Consp. II. 1856, 198.

Fregetta Lawrencii, LAWR. in Baird's B. N. Am. 1858, 832. — BAIRD, Cat. N. Am. B. 1859, no. 646.

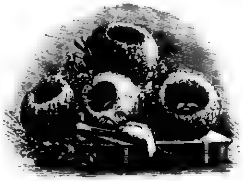
Thalassidroma leucogastra, GOULD, Ann. Mag. N. H. XIII. 367; B. Austr. VII. 1848, pl. 63.

HAB. Tropical oceans in general. Accidental on Florida coast?

SP. CHAR. *Adult;* Grayish dusky, lighter on the larger wing-coverts; remiges and rectrices dull black, the latter white at the extreme base, except the middle pair; lower parts from the breast back, a large portion of the under surface of the wing, with upper tail-coverts, white. Bill, legs, and feet black.

Wing, 6.00–6.50 inches; tail, 3.00–3.30; culmen, .50; tarsus, 1.40; middle toe without claw, .80.

So far as we are aware, the Black-and-White Stormy Petrel is only known to have been taken in a single instance within our waters, and its claim to a place in the fauna of North America rests entirely on the capture of these specimens on the Gulf coast of Florida. Seven examples of this bird are said to have been captured with a hook and line by the captain of a vessel while at anchor in the harbor of St. Mark's, Fla. One of these was secured by Mr. John Hooper, of Brooklyn, N. Y. They were observed about the vessel two days; after which none were met with. In regard to their distribution in other parts of the world, and habits generally, I have no information.



ORDER PYGOPODES.

THE DIVING BIRDS.

THE Pygopodes include three very distinct families of birds, all of which are well represented in North America. Some authors include in this Order the Penguins (*Spheniscidæ*); but they possess so many peculiar features as unquestionably to entitle them to the rank of a distinct Order (*Sphenisci*).

The families of Pygopodes which come within the scope of the present work may be defined as follows: —

A. *Hallux present.*

1. **Podicipidæ.** Toes lobed, the nails flat, broad, and rounded at tips; tail rudimentary; a bare loral stripe extending from the bill to the eye; bill variable in form, but always more or less elongated.
2. **Urinatoridæ.** Toes fully webbed, the nails curved, acute, claw-like; tail normal; lores completely and compactly feathered; bill elongated, acute, compressed.

B. *Hallux absent.*

3. **Alcidæ.** Toes fully webbed, the claws curved and acute; tail normal; lores feathered; bill excessively variable in form.

FAMILY PODICIPIDÆ. — THE GREBES.

CHAR. Swimmers resembling the Loons in the posterior insertion of the legs, but the toes lobate and semipalmate, instead of completely webbed, the claws broad, flat, and nail-like, instead of normally narrow and curved. Bill variable in shape; nostrils variable, but without an overhanging lobe; wings very short and concave, the primaries covered by the secondaries in the closed wing; tail rudimentary, consisting of a mere tuft of downy, loose-webbed feathers, without perfectly formed rectrices; plumage of the lower surface remarkably silky and lustrous, usually white.

The Grebes have by many authors been included in a single genus — *Podiceps* (= *Colymbus*) — while a majority of writers admit but two — *Podiceps* and *Podilymbus*. The former, however, in this comprehensive sense, contains many extremely dissimilar forms, and should, it appears to us, be subdivided, as has been done by Dr. Coues in his monograph of the family ("Pr. Philad. Acad." 1862, p. 230). The following North American genera appear to be rather well characterized. *Colymbus*, it may be remarked, approaches *Æchmophorus* through the South American *C. major*, BODD., a species having the bill of *Æchmophorus*, but the coloration and shorter neck of a true *Colymbus*.

A. Bill slender, the length of the culmen from 2½ to 6 times greater than the basal depth.

a. Size large (wing, 6.45–9.00 inches; culmen, 1.50–3.05).

1. **Æchmophorus.** Neck extremely long (almost equal to the body in length); bill longer than the head, very slender and acute (the culmen 5 to 6 times longer than the depth through the base), straight, or even slightly recurved; tarsus equal to the middle toe and claw; no colored tufts, ruffs, or patches about the head, and plumage the same at all stages and seasons.
2. **Colymbus.** Neck much shorter than the body; bill about equal to the head, stout (culmen about 3½ times the basal depth), the tip obtuse, and the outlines more or less curved; tarsus shorter than the middle toe with claw; adult in the breeding-season ornamented by colored ruffs, tufts, or patches about the head, the winter plumage and the young very different.

b. Size small (wing, about 5.00–6.00 inches; culmen, .95–1.10).

3. **Dytes.** Neck much shorter than the body; bill much shorter than the head, the culmen equal to about 3 to 3½ times the basal depth; tarsus about equal to the middle toe without the claw; adult in breeding-plumage with colored tufts or patches about the head; young and winter adult very different from the breeding-plumage.

c. Size very small (wing, 3.50–4.00 inches; culmen, less than 1.00).

4. **Podiceps.** Neck much shorter than the body; bill shorter than the head, the culmen less than 3 times the basal depth; tarsus decidedly shorter than the middle toe without claw; in the American species, adult in breeding-plumage without ornamental tufts or patches.

B. Bill very stout, the length of the culmen less than twice as great as the basal depth.

5. **Podilymbus.** Size rather small (wing, about 4.50–5.00 inches); bill much shorter than head, the culmen much curved terminally; tarsus shorter than middle toe without claw. No tufts in summer plumage, but bill crossed by a broad black bar, and throat covered by a black patch.

GENUS **ÆCHMOPHORUS**, COUES.

Æchmophorus, COUES, Pr. Ac. Nat. Sci. Philad. April, 1862, 229 (type, *Podiceps occidentalis*, LAWR.).

CHAR. Neck extremely long (almost as long as the body), the bill longer than the head, very slender and acute (the length of the culmen 5 to 6 times greater than the depth through the base), straight, or even slightly recurved; tarsus equal to the middle toe and claw. Plumage plain plumbeous-dusky or blackish above, pure white beneath, including the whole under side of head and neck; much the same at all seasons and stages.

Only one species of this genus is known; this, however, represented by two supposed races, distinguished mainly, if not entirely, by their dimensions. They differ as follows: —

1. **Occidentalis.** Wing, 7.45–8.50 inches (average, 8.07); culmen, 2.60–3.05 (2.78). *Hab.* Western North America in general, but chiefly the interior.
2. **Clarki.** Wing, 6.70–7.75 inches (average, 7.31); culmen, 2.10–2.48 (2.25).[1] *Hab.* Pacific coast of North America.

Æchmophorus occidentalis.

THE WESTERN GREBE.

Podiceps occidentalis, LAWR. in Baird's B. N. Am. 1858, 894. — BAIRD, Cat. N. Am. B. 1859, no. 704. — COOP. & SUCK. N. H. Wash. Terr. 1860, 281, pl. 38. — COUES, Key, 1872, 336; Check List, 1873, no. 608.

Æchmophorus occidentalis, COUES, Pr. Ac. Nat. Sci. Philad. 1862, 229; 2d Check List, 1882, no. 846. — RIDGW. Nom. N. Am. B. 1881, no. 729.

Podiceps (*Æchmophorus*) *occidentalis*, COUES, Birds N. W. 1874, 727.

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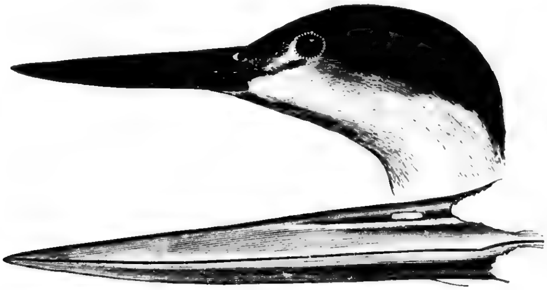
[1] The above measurements are from specimens in the National Museum collection. That the two forms intergrade, however, not only in measurements, but also other supposed distinctive characters, is, we believe, clearly demonstrated by Mr. Henshaw in Bull. Nutt. Orn. Club, October, 1881, pp. 214–218.

Hab. Western Province of North America, breeding nearly throughout its range; extending from Southern California on the southwest to the Red River Region (Shoal Lake, breeding abundantly) at the northeast.

Sp. Char. *Adult, full breeding-plumage:* Pileum and nape slaty black; remaining upper parts brownish slate, the remiges paler and more grayish, with the inner webs chiefly white; concealed bases of primaries and outer webs of secondaries next the shaft also white. Entire lower parts satiny white, abruptly defined against the black of the pileum and nape; sides, beneath the the wings, clouded with grayish; lores usually brownish gray, sometimes white. Bill olivaceous, becoming clear yellowish terminally and along the commissure; iris bright clear rose-red; legs and feet greenish olive in the dried skin. *Adult (and Young) in winter:* Similar, but pileum and nape brownish slate, like the back. "Bill dull, rather light yellow, the lower mandible deepening into orange terminally; culmen and broad longitudinal space on the side of the basal two thirds of the lower mandible dark olive-green, the former nearly black; iris pure carmine (having much the appearance of a red currant), growing narrowly whitish around the pupil; tarsi and toes dull olivaceous yellow, the outer side of the tarsus and joints of the toes nearly black."[1] *Downy young:* Above, uniform brownish gray, the nape and pileum lighter; lower parts uniform white; bill blackish. No streaks or other markings whatever about the plumage.



Total length, about 26.00 inches; extent, 40.00; wing, 7.45–8.50 (average, 8.07); culmen, 2.60–3.05 (2.78); depth of bill through base, .45–.56 (.54); tarsus, 2.75–3.10 (2.94); outer toe, 2.60–3.20 (2.67). (Fourteen adults.)

This large and conspicuous species was first made known in the "Report of the Pacific Railroad Explorations," from specimens collected by Drs. Kennerly, Cooper, and Suckley, at Bodega, Cal., in Shoalwater Bay, Fort Steilacoom, and on Puget Sound. Since that time this bird has been ascertained to have an extended distribution from the Pacific coast of Southern California to Shoal Lake, in the Fur Regions.

Mr. Donald Gunn, referring to this species, states that the large Grebes were only met with by him on the shores of Shoal Lake. Although he had travelled over a large portion of what is known as Rupert's Land, he is quite positive that he has never seen this bird anywhere before. He met with it in vast numbers at Shoal Lake. There he found them breeding, making their nests of bulrushes fixed to other rushes that were standing. The nest floats on the water, but is kept by the stems of the rooted plants, to which it is fastened, from drifting away from its moorings. All the other Grebes, so far as he has seen, make their nests of the same materials and in the same manner.

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[1] Fresh colors of an adult male killed January 13. (See Ridgway, Orn. Fortieth Parallel, p. 641.)

This species has been described as being a fine-looking bird as it sits on the water, riding very lightly, its long neck erect, its bill pointing horizontally forward. Its length of neck makes the motion, during the act of diving, a very peculiar one. When it flies, both its feet and its neck are outstretched. The colors of certain parts, which are very beautiful in life, change and fade after death.

This species is included by Mr. R. Browne in his list of the birds found on Vancouver Island. Dr. Cooper met with it among the alkaline lakes of the Great Plain of the Columbia, in October, 1860; and it was about the same time of the year that he obtained at Walla-walla, in 1853, the first known example of this species. In all probability it breeds on the shores of those lakes. Dr. Cooper also mentions that in his visit, in 1862, to Monterey, on the sea-coast of California, he noted its first arrival in that neighborhood about the 25th of September.

According to the observations of the same accurate and observant naturalist, this bird winters along the Pacific coast from Puget Sound to San Francisco, but does not, so far as he is aware, occur farther south. He remarks that this Grebe greatly resembles the Loon in its habits, so far as could be ascertained from observations made in the winter; but he was not able to obtain any information in regard to its habits in the breeding-season. This species can dive, and swim under the water, with the greatest ease; and when once raised above the surface, can fly with rapidity. About dusk it is often heard to make a loud bleating sound, especially in the spring. Dr. Cooper thinks it quite probable that birds of this species never obtain the elongated feathers on the head that decorate the other species of this family in the spring, since he has procured examples late in April without their exhibiting any signs of this adornment.

Captain Bendire found this Grebe an abundant summer resident in Lake Malheur, in Eastern Oregon, where it undoubtedly breeds. Mr. Henshaw regards the waters of Utah as the eastern limit of this peculiarly western species. It is common in Utah Lake in summer, and breeds there. In the fall its numbers are increased by arrivals from the north. It is less timid than others of this family, and very little difficulty is found in killing it with a shot-gun. The fishermen informed him that when they draw their seines this bird will often swim up to the edges, in close proximity to the boats, and not infrequently allows itself to be inclosed in the meshes. A single individual was shot in the Gila River, N. M., in November.

Æchmophorus occidentalis Clarkii.

CLARK'S GREBE.

Podiceps Clarkii, LAWR. in Baird's B. N. Am. 1858, 895. — BAIRD, Cat. N. Am. B. 1859, no. 705.

Æchmophorus Clarkii, COUES, Pr. Ac. Nat. Sci. Philad. 1862, 229. — RIDGW. Nom. N. Am. B. 1881, no. 730.

Podiceps occidentalis, var. *Clarkii*, COUES, Key, 1872, 336; Check List, 1873, no. 608 *a*.

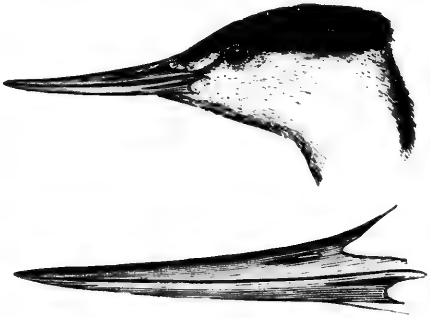
Æchmophorus occidentalis Clarki, COUES, 2d Check List, 1882, no. 846.

Podiceps (*Æchmophorus*) *occidentalis*, b. *Clarkii*, COUES, Birds N. W. 1874, 727.

HAB. Range nearly coextensive with that of the preceding, but chiefly confined to the Pacific coast district.

SP. CHAR. Exactly like *occidentalis*, but much smaller, with the bill more slender, and more or less recurved; lores usually white. Wing, 6.70–7.75 inches (average, 7.31); culmen, 2.10–2.48 (2.25); depth of bill through base, .45–.50 (.46); tarsus, 2.45–2.85 (2.67); outer toe, 2.35–2.75 (2.65). (Nine adults.)

While bearing much the same relation that *Urinator pacificus* does to *U. arcticus*, this "species" appears to be still in the "incipient stage," the measurements of the larger individuals inosculating with those of the smaller specimens of *occidentalis.* In fact, examples occasionally occur which may with equal propriety be referred to either species; a majority, however, are typically one or the other, the incompletely differentiated individuals forming a small minority. There is apparently no constant difference of coloration between the two, but *Clarkii* seems to have the lores more often distinctly whitish than *occidentalis.* (See Henshaw, "Bull. Nutt. Orn. Club," Vol. VI. Oct. 1881, pp. 214–218.)



It is not unlikely that the present bird may yet prove to be simply the female of *Æ. occidentalis.*

This form, which bears a very strong resemblance to *Æ. occidentalis,* was regarded by Mr. Lawrence as being a distinct species, but is now considered as only a variety. While it thus strongly resembles the *occidentalis* in size and in some of its markings, it constantly differs. The two seem to have nearly the same habitat; and as it is not usual for two races of the same species to dwell in exactly the same area, it seems more probable either that the differences are specific, or that they possess some sexual or other significance, unless the present form should be found to have a more southern range. The first known specimen of this form was taken by Mr. J. H. Clark in Chihuahua, Mexico, and other specimens were procured from the sea-coast of California at Santa Barbara and on San Pueblo Bay.

Dr. Cooper writes that near San Pedro, Cal., in July, 1863, he saw two large Grebes, which he had no doubt were of this variety, frequenting the creeks and bays for some months; but they were so very shy, and seemed to know so well the range of his gun, that he did not succeed in shooting one. He also saw large Grebes at Monterey, after the 25th of September; and as that is much earlier than the *Æ. occidentalis* is seen near the Columbia River, he thinks that these also may have belonged to this species. He observed nothing peculiar either in their habits or cries. Dr. Heermann obtained one of these birds at Santa Barbara, which he referred to as *C. cristatus.*

This bird, as well as all the other species of Grebes, and also the Loons, have a habit of gradually sinking into the water, until they entirely disappear, without leaving a ripple on the surface. They can also swim with the head or the bill only just above the water, and thus pass over a long distance without once being seen. One of these birds was shot near San Francisco by Mr. Hepburn. Subsequently to having made the above cited observations, Dr. Cooper writes that after a careful examination of some specimens obtained by himself at San Pedro in 1865, it appears to him doubtful whether the *Æ. occidentalis* is not identical with *Æ. Clarkii.*

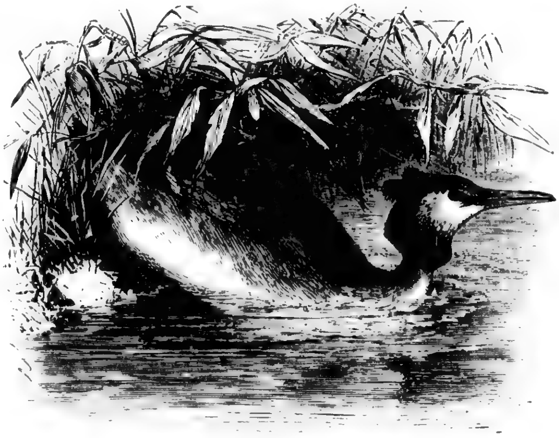
Eggs of this species from Shoal Lake, in British America, vary from 2.15 inches to 2.60 in their length, and from 1.45 to 1.50 in their breadth. They are unspotted, and in all essential respects resemble the eggs of all the members of the entire genus.

GENUS **COLYMBUS**, LINNÆUS.

Colymbus, LINN. S. N. ed. 10, I. 1758, 135; ed. 12, I. 1766, 220 (type, by elimination, *Colymbus cristatus*, LINN.).[1]

Podiceps, LATH. Ind. Orn. II. 1790, 780 (part; but, type, by elimination and restriction, *Colymbus fluviatilis*, TUNST.).

CHAR. Neck much shorter than the body; bill about equal to the head, stout (length of the culmen about three and a half times the depth through the base), the tip blunt, and the outlines more or less convex; tarsus shorter than middle toe with claw. Breeding plumage ornamented by colored tufts or patches about the head, the winter plumage and the young very different.



C. cristatus.

Only one species of this genus, as here restricted, belongs to North America, the occurrence of *C. cristatus* — which for half a century or more has been included in most works on North American ornithology, and generally considered a common bird of this country — being so very doubtful that there is not a single reliable record of its having been taken on this continent. For convenience of identification, however, in case it should be found in America, the characters of this species are given along with those of *C. Holbœllii* and the European representative of the latter, *C. grisegena.*

1. **C. Holbœllii.** Wing, 7.30–8.10 inches (average, 7.65); culmen, 1.65–2.40 (2.02); depth of bill at base, .52–.60 (.57); tarsus, 2.25–2.60 (2.53); outer toe, 2.50–3.05 (2.76). No

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[1] Notwithstanding the extreme dislike we have to this harsh transfer of the name *Colymbus* from the Loons to the Grebes, we unfortunately can see no help for it. Sundevall has clearly shown (Met. Av. Nat. 1872, p. xxix) that it should never have been retained for the former, and most other authorities are pretty well agreed as to the incorrectness of its use in that connection. It is a case in which the facts are clear, and the rules of procedure so explicit that there is no alternative if we would be consistent in our efforts to assist toward reaching a fixed or stable nomenclature.

distinct tufts about head in breeding-plumage; neck bright rufous, sides of head ash-gray, pileum and nape glossy black. *Hab.* North America.

2. **C. grisegena.**[1] Wing, 6.45–7.00 inches (average, 6.63); culmen, 1.50–1.55 (1.53); depth of bill through base, .45–.50 (.48); tarsus, 1.98–2.15 (2.06); outer toe, 2.30–2.40 (2.35). Colors of *C. Holbœllii*. *Hab.* Palæarctic Region.
3. **C. cristatus.**[2] Wing, 6.80–7.75 inches (average, 7.10); culmen, 1.75–2.30 (1.96); depth

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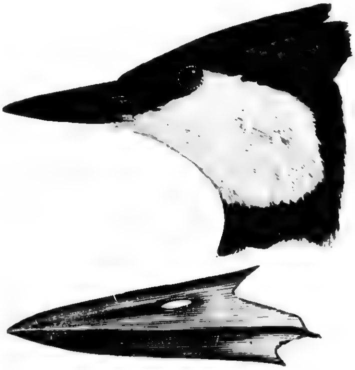
[1] Colymbus grisegena, Bodd. Red-necked Grebe.

Colymbus grisegena, Bodd. Tabl. P. E. 1783, 55 (ex Pl. Enl. 404, fig. 1).
Podiceps griseigena, Gray, Genera B. III. 633.
Colymbus parotis, Sparrm. Mus. Carls. 1786, pl. 9. — Gmel. S. N. I. ii. 1788, 592.
Colymbus subcristatus, Jacq. Beitr. 1784, 37, pl. 18.
Podiceps subscristatus, Bechst. Taschb. Vög. Deutschl. 1803, 351.
Podiceps rubricollis, Lath. Ind. Orn. II. 1790, 783.
Colymbus cucullatus et *nævius*, Pall. Zoog. R.-A. II. 1826, 355, 356.
Podiceps canogularis, Brehm, Vög. Deutschl. 1831, 958.

Sp. Char. Exactly like *C. Holbœllii*, but much smaller. Wing, 6.45–7.00 inches; culmen, 1.50–1.55; depth of bill through base, .45–.50; tarsus, 1.98–2.15; outer toe, 2.30–2.40.

Following is a description of an example of this species in the down: — *Downy Young:* Head and neck longitudinally striped with dusky and dull white, the dusky stripes widest (except underneath the head), and about six in number; the crown is divided medially by a narrow stripe of white, which, however, does not extend anteriorly to the white of the forehead; the dusky stripe, extending back from the lower eyelid, terminates just behind the ears, but that extending from above the eye is continued down the side of the neck, there being between this and its fellow of the opposite side three dusky stripes down the back of the neck; there is a broad but short rictal streak, with three narrower streaks on the chin; there are also three dusky streaks on the throat — one on each side, and one between. The plumage of the body is dull grayish-fuliginous, lighter beneath, where fading into dull grayish white on the abdomen. (No. 57307, Europe.)



C. grisegena.

From the corresponding stage of *C. cristatus*, this may be distinguished most readily by the much darker lower parts, the abdomen only being light colored, and this dull grayish white, while in the young of *C. cristatus* the entire lower parts, except the sides, are nearly pure white. There are also some differences in the markings of the head and neck, the most obvious of which consist in the absence of streaks on the throat in *C. cristatus*.

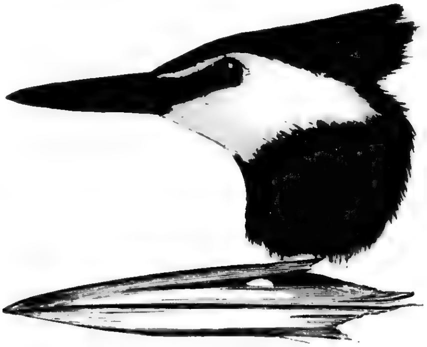
[2] Colymbus cristatus. The Crested Grebe.

Colymbus cristatus, Linn. S. N. ed. 10, I. 1758, 135; ed. 12, I. 1766, 222.
Podiceps cristatus, Lath. Ind. Orn. II. 1790, 780. — Sw. & Rich. F. B. A. II. 1831, 410. — Nutt. Man. II. 1834, 250. — Aud. Orn. Biog. III. 1835, 598, pl. 292; Synop. 1839, 356; B. Am. VII. 1844, 308, pl. 479. — Lawr. in Baird's B. N. Am. 1858, 893. — Baird, Cat. N. Am. B. 1859, no. 703. — Coues, Key, 1872, 336; Check List, 1873, no. 609; Birds N. W. 1874, 729.
Colymbus urinator, Linn. S. N. ed. 12, I. 1766, 223.
Podiceps australis, Gould, P. Z. S. 1844, 135.
Podiceps Hectori, Buller, Essay on New Zealand Orn. 1865, 19.

Hab. Northern part of the Palæarctic Region; also, New Zealand and Australia. *No valid North American record!*

Sp. Char. *Adult, breeding-plumage:* Pileum, including an elongated tuft on each side of the occiput, and outer margin (broadly) of the frill, black; lores, postocular region, malar region, chin, and upper part of of bill through base, .45–.55 (.51); tarsus, 2.25–2.70 (2.48); outer toe, 2.50–2.85 (2.63). *Breeding-plumage:* Throat and chin buffy white, passing posteriorly into rich ferruginous on the prominent auricular "frill," which is tipped with black; pileum and elongated tuft on each side of occiput, black. *Hab.* Palæarctic Region.

the throat, buffy white, succeeded posteriorly by ferruginous, on the basal portion of the frill. Upper parts dark brownish gray, sometimes nearly or quite black; secondaries, anterior border of the wing, and inner tertials, entirely white; lower parts white, the sides and flanks grayish brown, tinged with ferruginous. "Bill blackish brown, tinged with carmine [in the female "dusky green"]; bare loral space dusky green, as is the edge of the eyelids; iris bright carmine; feet greenish black, the webs grayish blue" (AUDUBON). *Winter plumage:* Similar to the summer dress, except the plumage of the head, the occipital tufts and the frill being entirely absent; pileum and nape sooty grayish brown, fading gradually into grayish white on the lower part of the head and neck, the foreneck pale grayish; sides and flanks without any reddish tinge. *Downy young:* Neck with six longitudinal dusky stripes alternating with as many stripes of white; that on the foreneck fainter than the rest, and bifurcating below, each branch extending toward the side of the breast; head with six dusky stripes, the four upper ones being continuations of the neck-stripes, the fifth and sixth running across the cheek (one on each side of the head) from beneath the eye back to beneath the ears; a dusky spot on the lower jaw, beneath the rictus; chin and throat entirely white. Upper parts sooty grayish brown, lower parts white.



C. cristatus.

Total length, about 19.00–24.00 inches; extent, 30.00–33.00; wing, 6.80–7.75; culmen, 1.75–2.30; depth of bill at base, .45–.55; tarsus, 2.25–2.70; outer toe, 2.50–2.85.

A specimen in summer dress, said to have been obtained in Greenland, is similar to European examples, but has the wing shorter and the bill narrower than any of the five European skins we have examined. An example from New South Wales is not distinguishable in colors from European ones, but is much larger; while two from Lake Wakatipu, New Zealand, besides being even larger than the Australian specimen, have much longer bills and tarsi, and are altogether richer colored than any others, the upper parts being deep brownish black, and the basal portion of the frills rich chestnut, while the crown and occipital tufts are glossy greenish black.

The following measurements exhibit the apparent geographical variations in size: —

	Wing.	Culmen.	Depth of bill at base.	Tarsus.	Outer toe.
Average of 5 European specimens,	7.25	1.54	.53	2.30	2.58
One specimen said to be from Greenland,	6.80	1.80	.45	2.30	2.50
Average of 2 New Zealand specimens,	7.47	2.25	.55	2.70	2.76
One specimen from New South Wales,	7.30	2.23	.52	2.62	2.70

Colymbus Holbœllii.

THE AMERICAN RED-NECKED GREBE.

Podiceps rubricollis, "Lath." Bonap. Synop. 1828, 417. — Sw. & Rich. F. B. A. II. 1831, 411. — Nutt. Man. II. 1834, 253. — Aud. Orn. Biog. III. 1835, 617, pl. 298; Synop. 1839, 357; B. Am. VII. 1844, 312, pl. 480.

Podiceps rubricollis major, Temm. & Schleg. Faun. Jap. 1849, pl. 78, B (not *Colymbus major,* Bodd. 1783).

Podiceps griseigena, "Bodd." Lawr. in Baird's B. N. Am. 1858, 892. — Baird, Cat. N. Am. B. 1859, no. 702.

Podiceps Holbœllii, Reinh. Vid. Meddel. 1853, 76; Ibis, 1861, 14 (Greenland). — Coues, Pr. Ac. Nat. Sci. Philad. 1862, 231. — Ridgw. Nom. N. Am. B. 1881, no. 731.

Podiceps griseigena, var. *Hölbolli,* Coues, Key, 1872, 337; Check List, 1873, no. 610; Birds N. W. 1874, 730.

Podicipes griseigena Holbœlli, Coues, 2d Check List, 1882, no. 847.

Podiceps Cooperi, Lawr. in Baird's B. N. Am. 1858, 893 (in text; winter adult).

Podiceps subcristatus, Kittl. Denkw. II. 1858, 313 (not of Jacq. 1784).

Podiceps affinis, Salvadori, Atti Soc. Ital. VIII. 1866, 45.

Podiceps cucullatus, Tacz. J. f. O. 1874, 336 (not of Pall. 1826).

Hab. North America in general, including Greenland; breeding far north, migrating south, in winter, quite across the United States. Eastern Siberia, and south to Japan.

Sp. Char. *Adult, breeding-plumage:* Pileum (including lores and depressed occipital tuft) and nape glossy dull black; rest of the head light ash-gray, bordered above and below by whitish, this most distinct along the upper border, from the eyes back; neck (except nape) rich rufous, abruptly defined above against the ashy of the throat, but below gradually merging into the whitish of the breast. Upper parts blackish dusky, the feathers sometimes with paler margins; secondaries chiefly white. Lower parts grayish white, faintly spotted, except on the abdomen, with dusky grayish; sides and flanks nearly uniform grayish. "Bill brownish black, bright yellow at the base; iris carmine; tarsi and toes greenish black externally, yellow on the inner side, the edges of the lobes dusky" (Audubon). *Winter plumage:* Pileum dusky, the occiput without elongated feathers; neck smoky grayish brown, lighter in front, dusky on the nape; chin, throat, and malar region whitish. Otherwise as in the summer plumage. *Young:* Pileum and sides of the head dusky, marked with several white stripes — one originating at the sides of the forehead, and passing over and behind the eye, another extending from the eye backward over the auriculars, and another dividing the cheeks; a short whitish stripe on each side of the upper part of the nape; fore part and sides of the neck light ferruginous. Otherwise as in the adult.

Summer adult.

Total length, about 18.00 to 19.50 inches; extent, about 32.00; wing, 7.30–8.10 (average, 7.65); culmen, 1.65–2.40 (2.02); depth of bill at base, .52–.60 (.57); tarsus, 2.25–2.60 (2.53); outer toe, 2.50–3.05 (2.76). (Seventeen specimens.)

The American Red-necked Grebe is a counterpart of the European *C. grisegena*[1] in plumage, but is a very much larger bird, the difference in size being moreover entirely constant, as will appear from the following measurements: —

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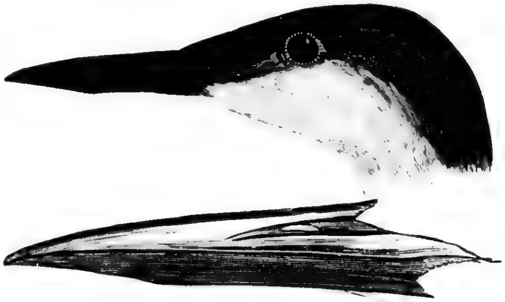
[1] See p. 426, footnote.

	Wing.	Culmen.	Depth of bill.	Tarsus.	Outer toe.
Average of 17 specimens of *C. Holbœllii* . .	7.65	2.02	.57	2.53	2.76
" 4 " *C. griseigena* . .	6.63	1.53	.48	2.06	2.35
Minimum of *C Holbœllii*	7.30	1.65	.52	2.25	2.50
Maximum of *C. griseigena*	7.00	1.55	.50	2.15	2.40

Examples from Eastern Asia appear to agree closely with those from North America. For the former the name "*cucullatus*, Pall.," has generally been used; but upon turning to p. 355 of the "Zoographia Rosso-Asiatica," we find that Pallas did not know the bird from Eastern Siberia, but described, under the name *cucullatus*, a specimen of the ordinary European species (*C. griseigena*, Bodd.).



Winter adult (*type of P. Cooperi, Lawr.*).

The Red-necked Grebe of North America, though probably not identical specifically with the European species, is closely allied to it both in appearance, markings, and habits; but it is said to differ from that species in size, being larger and stouter. It is distributed from the Middle States northward; being most common in the Fur Countries, where it breeds, and from which region it straggles southward in the winter as far as the Chesapeake. So far as known, it does not breed to the south of Calais, Me. In Northern Maine and New Brunswick — especially in the region of the St. Croix River, as far south as St. Andrew — this species is found in considerable numbers, and is much more common in the spring and in the fall than it is in the summer, many of these birds remaining in that region throughout the winter. A few of them stay during the summer and breed; but at that time they are present in much fewer numbers than in winter. This Grebe has been observed to have the same interesting peculiarities as the Horned Grebe and the Loon in regard to the management of its young. As soon as these are hatched the mother takes them upon her back, swims with them in this position, as if to sun them, and takes them with her under the water when diving for their food — feeding them with small fishes and vegetable substances.

This species is found as far west as the Pacific coast, and at least as far south as Vancouver Island, where Mr. R. Browne obtained specimens. Mr. Bernard Ross met with it on the Mackenzie River; and specimens have been received by the Smithsonian Institution from the Red River Settlement.

A single specimen was obtained by Mr. Elliott on the Prybilof Islands; it was the only one seen during his residence there. It had been observed before by the natives, who, however, affirmed that it was quite uncommon. Eggs of this species obtained from the Yukon and other interior Arctic localities, are rough and white, some inclining to pale greenish, others with buff-colored stains, and all of the usual elongated shape so peculiar to the family. They measure in length from 2.10 inches to 2.35, and in breadth from 1.25 to 1.45.

Professor Kumlien writes me that in October, 1873, his son Ludwig saw in the middle of Lake Koskonong five large Grebes, which were not *cristatus*, but which agreed perfectly with *C. grisegena* in their markings. Unfortunately he was unable to obtain one of them.

This Grebe is more or less common along the whole New England coast at different periods; and in the winter of 1838 I procured a number of examples in immature plumage in the Boston market, which were sent in the flesh to Mr. Audubon. Early in September, 1867, Mr. William Brewster procured a fine specimen in Plymouth, Mass., which had been shot as it was diving among the breakers. This bird is still found more or less frequently during the fall and winter in the markets of Boston.

According to Giraud, it occasionally extends its migrations along the coasts of Long Island and New Jersey. The specimens procured in that vicinity are nearly all young birds, the adult being a great rarity.

Mr. Donald Gunn, writes in regard to the presence of this species in the Red River Region, that it is a comparatively rare bird there, living in unfrequented and solitary places, feeding on small fish and fresh-water shells. He is not able to state the usual number of eggs that this bird lays, but from its general scarcity he is inclined to the opinion that it cannot be large. The flesh of this Grebe is black and unpalatable, and is never eaten by the whites.

Mr. Robert Kennicott, who found this species breeding in the neighborhood of Fort Yukon, states that the nest found June 14 was floating on the water among the grass on the borders of the lake. It was nearly flat on the top, and very little above the surface of the water, and contained three eggs. He saw the female, but only at a distance; both this species and *Dytes auritus* being seldom or never seen to leave their nests, as they quietly slip into the water and dive at once. After incubation has begun, the female, when she leaves her nest, covers up her eggs with wet grass taken from the bottom of her nest, unless compelled to depart on the instant. In several cases Mr. Kennicott found the eggs quite warm when thus hidden; and he was convinced that the bird could only have just left the nest on his approach, but that she had stopped long enough to conceal her eggs. The top of the nest is always more or less wet, and this causes the discoloration of the eggs.

This Grebe appears to have been found in considerable numbers at Fort Rae and on the Yukon by Mr. Kennicott and Mr. Lockhart; at Fort Rae also by Mr. S. Clarke; at Fort Simpson by Mr. Ross; on Peal's River by Mr. C. P. Gaudet; at Fort Yukon by Mr. S. Jones and Mr. J. Sibbiston; among the mountains west of the Lower Mackenzie, at Fort Anderson, by Mr. MacFarlane; and at Shoal Lake by Mr. D. Gunn.

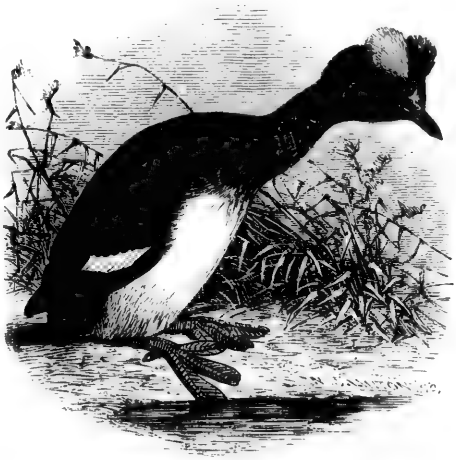
Mr. Bischoff collected specimens of this Grebe at Sitka; and Mr. Dall found it not uncommon in the marshes on the banks of the Yukon River as far up as Fort Yukon, where Mr. Kennicott had previously obtained its eggs. Sir John Richardson speaks of this Grebe as being very common in the Fur Countries, where it was found in nearly every lake having grassy borders.

Eggs of this species from Yukon, Peal's River, and Fort Simpson, resemble those of this genus generally, and vary greatly in size; namely, from 2.05 inches to 2.55 in length, and from 1.20 to 1.50 in breadth.

GENUS **DYTES**, KAUP.

Dytes, KAUP, Sk. Ent. Eur. Thierw. 1829, 49 (type, *Colymbus cornutus*, GMEL. = *C. auritus*, LINN.).
Proctopus, KAUP, l. c. (type, *Podiceps nigricollis*, BREHM).
Otodytes, REICH. Syst. Nat. 1853, p. iii (same type).

CHAR. Size small (wing 5.00 to 6.00 inches); neck much shorter than the body; bill much shorter than the head, the culmen equal to about three to three and a half times the basal depth; tarsus about as long as the middle toe without the claw. Breeding-plumage ornamented with colored tufts and patches about the head.



D. auritus.

Two well-marked species of this genus occur in North America, their characters being as follows: —

1. **D. auritus.** Bill compressed (deeper than wide at the base). *Breeding-plumage:* Lower neck and jugulum rufous; sides of occiput with very full tuft of dense, soft, blended ochraceous feathers. *Hab.* Northern hemisphere.
2. **D. nigricollis.** Bill depressed (wider than deep at the base). *Breeding-plumage:* Lower neck and jugulum black; sides of head behind eyes with a tuft-like patch of slender acicular ochraceous feathers.
   - *a.* Three or four inner primaries mostly or entirely white. *Hab.* Palæarctic Region, and Greenland. *Nigricollis.*
   - *β.* Inner primaries with inner webs wholly dusky; colors decidedly duller, and bill slenderer. *Hab.* Western North America. *Californicus.*

Dytes auritus.

THE HORNED GREBE.

Colymbus auritus, Linn. S. N. ed. 10, I. 1758, 135; ed. 12, I. 1766, 222.
Dytes auritus, Ridgw. Nom. N. Am. B. 1881, no. 782.
Colymbus cornutus, Gmel. S. N. I. ii. 1788, 591.
Podiceps cornutus, Lath. Ind. Orn. II. 1790, 783. — Sw. & Rich. F. B. A. II. 1831, 411. — Nutt. Man. II. 1834, 254. — Aud. Orn. Biog. III. 1835, 429, pl. 259; Synop. 1839, 357; B. Am. VII. 1844, 316, pl. 481. — Lawr. in Baird's B. N. Am. 1858, 895. — Baird, Cat. N. Am. B. 1859, no. 706. — Coues, Key, 1872, 337; Check List, 1873, no. 611; ed. 2, 1882, no. 848; Birds N. W. 1874, 731.
Colymbus obscurus, Gmel. S. N. I. ii. 1788, 592.
Colymbus caspicus, S. G. Gmel. Reise, IV. 1774-1784, 137. — Gmel. S. N. I. ii. 1788, 593.
Podiceps bicornis, Brehm, Vög. Deutschl. 1831, 96, pl. 44, fig. 4.

Hab. Northern hemisphere in general. Breeds in the Northern United States and northward.

Sp. Char. *Adult, breeding-plumage:* Head generally, including the fluffy tufts on each side of the upper neck, slightly glossy dull greenish black, becoming gradually dull sooty slate on the forehead; lores dull ochraceous-rufous, communicating with a broad superciliary stripe of bright ochraceous, which continues, gradually widening, to the sides of the occiput; foreneck rich rufous. Upper parts dusky, the feathers sometimes with indistinctly paler margins; secondaries chiefly or entirely white. Lower parts white, the sides mixed chestnut-rufous and grayish dusky. "Bill bluish black, its tip yellow; short loral space bright carmine, as is the iris, its inner margin white; edges of eyelids grayish blue; feet dusky externally, internally, and on anterior and posterior ridges of the tarsus dull yellow; claws dusky" (Audubon). *Winter plumage:* Pileum, nape, and sides of the jugulum smoky slate; under part and sides of the head, lores, and lower parts generally, white; jugulum faintly shaded with pale grayish, and sides clouded with dark grayish. Upper parts as in the summer plumage, but more slaty. "Bill bluish gray, as is the bare loral space; the eye bright carmine, with an inner white edge; the feet bluish gray" (Audubon). *Downy young (half-grown):* Pileum and nape dusky; sides of the head with two dusky stripes and several irregular spots of the same color; throat with a dusky streak on each side. Otherwise similar in color to the winter plumage.

Total length, about 14.75 inches; extent, 25.50; wing, 5.75; culmen, 1.00; tarsus, 1.75.

This species, variously known among authors as the "Horned Grebe," the "Dusky Grebe," and the "Sclavonian Grebe," is common to the northern portions of both continents, and is found on the Pacific coast as far north at least as Vancouver, and to Greenland on the eastern. It is equally common in the northern portions of Europe and Asia in the summer, wandering in the winter farther south. It is rather a rare bird in Great Britain during the summer, but is of more frequent appearance in the winter, frequenting the coast and the marshy districts; and is not uncommon in Ireland during the same season. It has been said to be resident in Scotland all the year, but there is no recent evidence of the fact. Mr. Dunn found it extremely rare in the Orkney and Shetland Islands, only noticing seven or eight. He describes it as being a very shy bird and a most expert diver — frequenting the sea, but always remaining close to the rocks. When alarmed it dives to a great distance, and on coming to the surface immediately takes wing.

Mr. Proctor, who visited Iceland in 1837, found this Grebe there frequenting the fresh water, and breeding among the reeds and the ranker herbage. The nest is large, and floats on the surface of the water, with which it rises and falls, being composed of a mass of reeds and other aquatic plants. The eggs vary from two to four in number, and when just laid are of a bluish-white color; but they soon become stained by the materials of which the nest is composed, and changed to a dirty yellowish brown. In size the egg is 1.75 inches long by 1.25 in breadth. The young birds when first hatched are covered with gray-colored down. When the old bird is alarmed by the approach of an intruder, she instantly dives, but reappears at the distance of about thirty yards. Mr. Proctor mentions that, having observed one of these birds dive from the nest, which he killed as it arose, he was surprised to see two young birds, that had been concealed beneath the wings of the parent, drop upon the water. In several other instances he found these birds diving with their young under their wings, these being placed with their heads toward the tail, and their bills resting upon the back of the parent bird.

Mr. George A. Boardman informs me that he has noticed similar habits in the birds of this species, which are not uncommon in the summer in the vicinity of Milltown, N. B. In the summer of 1873 he obtained a female with a brood of chicks. In swimming about in the lake the parent carried her young about with her on her back, the purpose of this being apparently to enable the young birds to have an opportunity of sunning themselves, as has been observed to be the habit of the common Loon in reference to its young. This species of Grebe is common near Calais, Me., throughout the year, occurring in the winter where there is open water.

In Scandinavia Mr. Wheelwright found this species sparingly distributed over the whole country, from Gottenburg up to East Finland and far into Norway. It is not very common in Sweden, but breeds there in the reedy parts of shallow water. Middendorff includes it in his List of the Birds of Siberia, where it is found in the wooded districts.

Professor Reinhardt mentions the occurrence of a single bird of this species, in immature plumage, in the southern part of Greenland. Captain Blakiston obtained specimens of it on the Plains of the Saskatchewan, and also about Hudson's Bay. Mr. Bernard Ross met with it on the Mackenzie River; Mr. Murray cites it as occurring on Lake Winnipeg and Hudson's Bay; and Mr. Kennicott obtained it on the Red River of the North. Mr. Dall killed a number of this species at Nulato, in May, 1868; but it was not very common in that region. One specimen obtained was a female with one egg well developed in the ovary. He obtained a parent with her two eggs from an Indian at Fort Yukon, in June, 1867. It is not otherwise referred to in the notes of explorers in the Arctic Regions, though Sir John Richardson states that it is very common in the Fur Countries, frequenting every grass-bordered lake. Its shy and retiring habits render it a bird not readily noticed. It is given by Mr. R. Browne as one of the birds of Vancouver Island.

This Grebe is quite common in the fall in the Boston market, the specimens being usually in an immature plumage.

According to Giraud, it is quite common in and about Long Island. It is well known to the hunters of that region under the name of the "Hell-diver" — an emphatic mode of indicating its wonderful powers of disappearance under water. It is usually found in the submerged meadows; and when surprised, avoids pursuit by diving. Its food is chiefly fish, and its flesh is said to be very unpalatable.

Mr. J. A. Allen met with this Grebe in the valley of Great Salt Lake, in the month of September.

A single specimen of this bird is recorded by Major Wedderburn as having been taken in Bermuda in 1846; and Mr. Hurdis mentions that a fine specimen in the spring plumage was shot in February, 1855.

Professor Kumlien informs me that this Grebe arrives in Southern Wisconsin in April, and is not rare in Lake Koskonong in May. It keeps within a few rods of the shore, where the water is not too shallow, but is rarely, if ever, seen far out in the lake. It is not known to breed there, and is not seen in the summer.

In 1842, when collecting on the Island of Gottland, in the Baltic, July 14, Mr. Kumlien procured seven adult specimens and four young chicks. The old birds were quite tame, and would not take to wing, or did so very reluctantly. When startled they flew very sharply, but low. They were great divers; but the water being less than two feet deep, and clear, he could easily see them under the water, and caught two of the old birds while they were diving. He has never met with this species in the fall.

This Grebe probably breeds from New Brunswick to Oregon in all suitable places, and north of those regions. In the neighborhood of Pembina its eggs are found by the middle of June, on nests essentially similar to all those of this family, being floating masses of reeds. The young are nearly full-grown by the last of July or the first of August. Examples of this species were secured in large numbers, during the breeding-season, at Fort Resolution, on the Yukon, by Mr. Kennicott; by Mr. Ross on the Anderson, near Fort Simpson, Fort Rae, and Fort Resolution; on Big Island by Mr. Reid; and on the Lower Mackenzie by Mr. Sibbiston.

The eggs of this species are usually four in number. They are very nearly oval, with little difference in either end, and have quite a smooth surface. The ground-color, like that of the eggs of all the Grebes, is originally of a bluish chalky-white, but more or less incrusted. They almost always become discolored, and are thus changed to various shades of buff, brown, and even, in some instances, to orange. Eggs from Great Slave Lake and from the Yukon River, in the National Museum, vary in length from 1.60 to 1.80 and 1.85 inches, and in breadth from 1.10 to 1.15 and 1.20. The longest eggs have usually the smallest breadth.

Dytes nigricollis.

THE EARED GREBE.

a. Nigricollis.

Colymbus auritus, LINN. Faun. Suec. ed. 2, 1761, 53 (part; not of 1758).
Podiceps nigricollis, BREHM, Vög. Deutschl. 1831, 963.
Dytes nigricollis, RIDGW. Nom. N. Am. B. 1881, no. 733.
Eared Grebe, YARR. Brit. B. ed. 2, III. 417; ed. 3, III. 420, fig.; *et* AUCT.

b. Californicus.

Podiceps auritus, NUTT. Man. II. 1834, 256. — AUD. Orn. Biog. V. 1839, 108, pl. 404; Synop. 1839, 358; B. Am. VII. 1844, 322, pl. 482. — LAWR. in Baird's B. N. Am. 1858, 897.
Podiceps californicus, HEERM. Pr. Ac. Nat. Sci. Philad. 1854, 179; Pacific R. R. Rep. X. 1859, 76, pl. 8 (young). — LAWR. in Baird's B. N. Am. 1858, 896. — BAIRD, Cat. N. Am. B. 1859, no. 707.
Podiceps (*Proctopus*) *californicus*, COUES, Pr. Ac. Nat. Sci. Philad. 1862, 231, 404.
Podiceps auritus, var. *californicus*, COUES, Key, 1872, 337; Check List, 1873, no. 612; Birds N. W. 1874, 733.
Podicipes auritus californicus, COUES, 2d Check List, 1882, no. 850.
Dytes nigricollis californicus, RIDGW. Nom. N. Am. B. 1881, no. 733 *a*.

Hab. The typical form restricted to the Palæarctic Region and Greenland; var. *californicus* distributed over Northern and Western North America, north to Great Slave Lake, south to Guatemala, and east to the Mississippi Valley. Breeds nearly throughout its North American range.

Sp. Char. *Adult, breeding-plumage:* Head, neck, and upper parts dull black; on each side of the head, behind the eyes, and occupying the whole of the postocular and auricular regions, a flattened tuft of elongated, narrow, and pointed feathers of an ochraceous color, those of the lower part of the tuft inclining to rufous or ferruginous, those along the upper edge straw-yellow or buff, sometimes, but rarely, forming a rather well-defined streak; fore part of the head sometimes inclining to grayish or smoky dusky. Upper parts blackish dusky, the secondaries — sometimes also the inner primaries — mostly or entirely white. Lower parts satiny white, the sides mixed chestnut-rufous and dusky. Bill deep black; iris bright carmine, with an inner whitish ring; legs and feet "dusky gray externally, greenish gray on the inner side" (Audubon). *Winter plumage:* Pileum, nape, and upper parts fuliginous-slate or plumbeous-dusky; malar region, chin, and throat white; auricular region white, sometimes tinged pale grayish buff or light grayish; fore part and sides of the neck pale dull grayish; lower parts satiny white, the sides plumbeous-dusky. "Upper mandible greenish black, growing pale ashy olive-green on basal third of the commissure (broadly) and on the culmen; lower mandible ashy olive-green, paler below, and more yellowish basally; iris bright orange-red, more scarlet outwardly, and with a fine thread-like white ring around the pupil; tarsi and toes dull blackish on the outer side, passing on the edges into olive-green; inner side dull light yellowish green; inner toe apple green."[1] *Young, first plumage:* Similar to the winter adult, but colors more brownish. *Downy young:* Top of the head, as far down as the auriculars, dusky, the forehead divided medially by a white line, which soon separates into two, each of which again bifurcates on the side of the crown (over the eye), one branch running obliquely downward and backward to the sides of the nape, the other continued straight back to the occiput; middle of the crown with a small oblong or elliptical spot of bare reddish skin. Suborbital, auricular, and malar regions, chin, and throat immaculate white; foreneck pale grayish; lower parts white, becoming grayish laterally and posteriorly; upper parts dusky grayish.

Total length, about 13.00 inches; extent, 21.00; wing, about 5.20–5.50; culmen, .95–1.10.

With four adults and two young birds of true *nigricollis*, and a very large series of American specimens (*P.* "*californicus*," Lawr.), we notice certain differences, already pointed out by Dr. Coues ("Pr. Philad. Acad." 1862, p. 231), which distinguish the birds of the two continents, with the very notable exception of a single specimen of the American series, from California, in which the chief supposed peculiarity of the European form is vastly exaggerated. Were it not for this solitary exception to the rule, we should have little hesitation in separating the American birds as a distinct species. It should be borne in mind in this connection that the series of European specimens is very small, so that a conclusion based upon their comparison with the American series would hardly be a fair one. All the European examples we have seen, both old and young, have stouter bills, with the gonys more decidedly ascending; and the latter are more darkly colored than the young of the American form.

The main difference supposed to distinguish the American from the European birds of this species is stated by Dr. Coues to be as follows: "In the American Eared Grebe all the primaries are throughout their whole extent dark chocolate-brown, with a more or less notable amount of dull reddish in the adult. The two first secondaries are of the color of its primaries, and bordered with white; and the basal portions and shafts of all, for the greater part of their length, are of the same chocolate-brown. In all the specimens of the European type examined, the characters of the wing are very different. The four inner primaries are wholly pure white; the next is white, with a sprinkling of brown on the outer web; the next is white, its outer vane brown; and all the secondaries, except the three innermost, are entirely pure white, and their shafts are white to the very base. The three innermost have a dusky spot near the end of the outer web. These differences, so far as we can discover, are entirely constant; and if so, quite sufficient to separate the two."

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[1] Orn. Fortieth Parallel, p. 642; from a male killed, December 21, at Pyramid Lake, Nev.

Since the writing of Dr. Coues's admirable synopsis of the Grebes, the number of specimens of these birds, and especially of the American Eared Grebe, in the collection of the National Museum has very greatly increased, so that we have now probably more than double the amount of material which came under Dr. Coues's inspection. We have examined this material very carefully, and find in the American series but the one specimen mentioned above which does not confirm the difference pointed out. The specimen in question (No. 74461, Stockton, Cal., May 9: L. BELDING) has *all* the primaries white, except their terminal portion, less than half of the exposed portion of the quills being brown! Although in every other respect the coloration of this example is entirely normal, the amount of white on the quills is so very unusual, even for a European specimen, that there is much probability of its being an indication of partial albinism.

On the other hand, an adult male, in breeding-plumage, from Europe (not seen by Dr. Coues), has the outer web of all but *two* of the inner quills entirely brown, except the extreme tip of the seventh, eighth, and ninth quills, the tenth and eleventh[1] having much brown near the end of the outer web, while the tenth has a brown spot near the end of the inner web also. It is therefore evident that the amount of white on the inner quills varies to some extent in the European bird; but we have yet to see a specimen in which there is not more or less of white on the inner webs of all the quills, with the outer webs of two or more of the inner quills white also. The difference in the form and size of the bill, and the darker color of the young, of the European bird, is apparently constant, so that, upon the whole, we can hardly do otherwise than separate the birds of the two continents as tolerably well-defined races.

Both American and European specimens vary considerably in the quantity of rufous along the sides, some examples having the entire sides and flanks a nearly continuous chestnut-rufous, while others have only a slight tinge of this color; a nearly equal admixture of rufous and dusky is, however, more usual. There is also much variation in the brightness of the elongated feathers on the sides of the head, some having these tufts a nearly uniform dull buff or ochraceous, while in others they are rich rusty rufous, those along the upper border being bright ochraceous, in marked contrast. This latter condition, or a brighter plumage generally, seems more common among European specimens, and may prove characteristic of that form.

A very fine adult in summer plumage, from Northern Europe, in the collection of the Boston Society of Natural History (No. 8164, Lafresnaye Collection), is remarkable for the great amount of rufous on the lesser wing-coverts, where this color prevails anteriorly; the middle, and even the greater, coverts being spotted with this color. The sides and flanks are almost continuously rich chestnut-rufous. We have not been able to detect a trace of rufous on the lesser wing-coverts in any other of the numerous specimens examined, either European or North American. The five inner primaries all have the inner webs white, except at the tip; but there is not a trace of white on the outer webs, except of the last two.

The Californian Grebe is a form very closely allied with *Dytes nigricollis* of the Palæarctic Region; and it was probably one of this latter species which was figured and described by Audubon as *Podiceps auritus*, and said to have been received from Western America. The present form appears to have an area of distribution bounded, approximately, by the Missouri River Region on the east, and extending westward to the Pacific, and northward to an indefinite extent.

Dr. Heermann mentions finding this Grebe abundant in California, both on the sea-shore and on the inland fresh-water ponds; Dr. Palmer met with it in the neighborhood of Guaymas, in Western Mexico; and Mr. Salvin mentions finding it common on the Lake of Dueñas, in Guatemala, where it was in its immature and winter plumage. A single specimen in its summer dress was shot near Cubalco, in the Guatemala province of Vera Paz.

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[1] The Grebes have eleven primary quills!

Dr. Cooper, while at Monterey, on the coast of California, saw, about the middle of September, some small Grebes which proved to be of this species, and which had apparently only recently come from their breeding-station. By the 18th of the month families of about five each had become common. Dr. Cooper gives as the habitat of this species California, and thence northward and eastward to the head waters of the Missouri River. At Monterey, about the middle of September, 1861, he met with flocks of four or five just arrived from the mountains, and swimming very tamely close to the shores; and he found them very numerous during the ensuing winter along the southern coast. They were generally very fearless, unless they had been repeatedly shot at, swimming and diving actively near the shore, and rarely taking wing, though able to fly rapidly when startled. Most of this species go north in April; but at Santa Barbara, on the 5th of May, he shot a female — probably an immature or sickly bird. He met with individuals of what he supposed to be this species in the Colorado Valley, on a small pond; and Dr. Heermann mentions his having frequently met with them on fresh water. Dr. Suckley, in 1853, shot one on the west side of the Rocky Mountains in about lat. 47° N.; and they have been obtained by Dr. Hayden on the Upper Missouri River in September. On one occasion Dr. Cooper found an individual in a deep ravine, into which it had probably been blown in a fog, and where it had been unable to rise from the ground.

The Californian form of the Eared Grebe was found quite numerous about Denver, Col., by Mr. Henshaw as late as the 15th of May. The birds were seen occasionally in the river, but resorted mostly to certain small ponds not well adapted as breeding-grounds, and they were apparently still migrating. Later, on the 23d of June, they were found breeding in the alkali ponds of Southern Colorado, where he noticed them in several of these ponds, and presumed that small colonies had been formed in each. In the only instance in which he was able to inspect their nests a community of a dozen pairs had selected a bed of reeds in the middle of the pond, isolated from the land by a considerable interval of water. The nests are described as being slightly hollowed piles of decaying reeds and rushes, just raised above the surface of the water, upon which they float. Each nest contained three eggs, most of them being fresh, a few only being in a somewhat advanced stage of incubation. In every instance the eggs were entirely covered by a pile of vegetable material; and as in no case were the birds found incubating, even where the eggs contained slight embryos, it seems highly probable that their hatching is dependent more or less upon the heat derived from the sun's rays.

The eggs are said to vary little in shape, being considerably elongated, and one end slightly more pointed than the other, and in size varying from 1.70 to 1.80 inches in length, and from 1.18 to 1.33 in breadth. The color is a faint yellowish white, usually much stained by contact with the nest. The texture is generally quite smooth, but in some cases roughened by a chalky deposit.

Captain Bendire noted this species as being a common summer resident in Eastern Oregon, breeding in colonies in several localities in the neighborhood of Camp Harney. He found in the summer of 1876 quite a number of its nests, containing from three to five eggs. It was seen by Mr. Gunn breeding in great numbers at Shoal Lake.

Eggs of this species from California, and from Shoal Lake, in British America, resemble in size and shape, as well as in their ground-colors, those of the Horned Grebe. The measurements of four, taken as typical, are: 1.70 by 1.10 inches; 1.70 by 1.25; 1.75 by 1.15; and 1.80 by 1.25.

GENUS **PODICEPS**, LATHAM.

Podiceps, LATH. Ind. Orn. II. 1790, 780 (part; type, by elimination and restriction, *Colymbus fluviatilis*, TUNST.).

Tachybaptus, REICHENB. Syst. Av. 1852, p. iii (type, *Colymbus minor*, GMEL., = *C. fluviatilis*, TUNST.).

CHAR. Very small (wing not more than 4.00 inches). Neck much smaller than the body; bill shorter than the head, the culmen less than 3 times the basal depth; tarsus decidedly shorter than the middle toe without claw; adult in breeding-plumage without ornamental tufts (or, in the American species, colored patches).

Although quite different in its coloration from the type of the genus (*P. fluviatilis*), which has the head brightly colored in the breeding-season, the American species which we place here agrees very minutely in the details of form.

Podiceps dominicus.

THE LEAST GREBE.

Colymbus dominicus, LINN. S. N. I. 1766, 223 (based on *Colymbus fluviatilis dominicensis*, BRISS. Orn. VI. 1760, 64, pl. 5, fig. 2).

Podiceps dominicus, LATH. Ind. Orn. II. 1790, 785. — BAIRD, Rep. U. S. & Mex. Bound. Survey, II. 1859, pt. ii. Birds, 28; Birds N. Am. ed. 1860, pl. 99, fig. 1; Cat. N. Am. B. 1859, no. 708 *a*. — COUES, Key, 1872, 338; Check List, 1873, no. 613; ed. 2, 1882, no. 851.

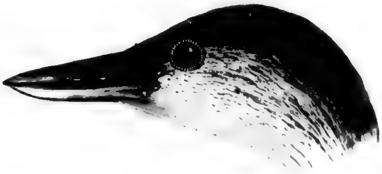
Sylbeocyclus dominicus, COUES, Pr. Ac. Nat. Sci. Philad. 1862, 232.

Podiceps (*Tachybaptes*) *dominicus*, COUES, Birds N. W. 1874, 736.

Tachybaptes dominicus, RIDGW. Nom. N. Am. B. 1881, no. 734.

HAB. The whole of tropical America, both continental and Antillean; south to Paraguay, north to Texas and Lower California.

SP. CHAR. *Adult, breeding-plumage:* Head and neck dark grayish or dull plumbeous, the pileum slightly glossy greenish black, the chin and throat dull black; remaining upper parts dusky brown, the remiges light brownish gray, with their inner webs chiefly white. Lower parts white, clouded, chiefly beneath the surface, with grayish dusky, the sides and crissum uniform grayish brown, the jugulum similar, sometimes tinged with ferruginous. Bill deep black, the tip paler; iris orange; legs and feet blackish. *Winter plumage:* Similar to the preceding, but chin and throat white, and the lower parts more uniformly white. *Downy young:* Head and neck marked with white and dusky black lines; upper parts uniform dusky, lower grayish white.[1]



Total length, about 9.00 inches; wing, 4.00; culmen, .90; depth of bill at base, .35; tarsus, 1.30; middle toe, without claw, 1.50.

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[1] The downy young are thus described by M. Taczanowski, in Proc. Zool. Soc. Lond. 1882, p. 49: — "The young ones in down, collected in July, have the top of the head black, with a rufous spot in the middle and a series of white stripes disposed in the following manner: a median stripe in front of the

This diminutive Grebe is a West Indian, Mexican, Central American, and South American species, coming within our fauna only in Southwestern Texas and in the valley of the Colorado.

In the Berlandier Collection, purchased by Lieutenant Couch and presented to the Smithsonian Institution, there were a number of the eggs of this Grebe, showing that this bird must be not uncommon in the valley of the Rio Grande, especially on its western side.

Mr. Salvin met with this species on the Lake of Dueñas on the 15th of October, 1859. Mr. G. C. Taylor saw several individuals on the lagoon in Tigre Island, Honduras. Mr. E. C. Taylor mentions his meeting with it in Porto Rico. There he once came upon several of these birds swimming about in a deep broad ditch, and succeeded in obtaining one. He found that it differs from the true Grebe in having the feet semipalmated as well as lobated. Léotaud includes it among the birds of Trinidad, where it is frequently to be met with. He regards it as a true Grebe in its habits, and as passing all its life in the water. Its plumage thickly matted, and thoroughly impregnated with oil, is utterly impervious to moisture. The anatomical formation of its respiratory organs is such that there is not the usual necessity for frequent renewals of respiration. When, therefore, it plunges in alarm under the water, to escape the danger that menaces, it will exhaust the patience of the hunter before it reappears. Sometimes it will go to the bottom, and there remain a long time, moving about all the while as if it were on the land. Whenever it chances to be upon the land, and attempts to move, its awkwardness clearly indicates that the bird is entirely out of its element. When it is at rest it keeps itself nearly upright, supporting itself on its tarsi and rump. Léotaud also mentions that he has heard of persons who maintain the excellence of the flesh of this Grebe, but that he is decidedly not one of that number. He is not able to state with positive certainty whether this species is a resident of Trinidad, or only a visitant.

Dr. Burmeister mentions that this species is found everywhere throughout the whole region of the La Plata, upon the lakes, ponds, and streams in the pampas, and in the lagoons near the larger rivers, preferring always still water.

Colonel Grayson speaks of the Santo Domingo Grebe as being an abundant and common species near Mazatlan, in Western Mexico. It is found in all the fresh-water ponds and lakelets of that locality, and may be met with near Tepic through the entire year.

Dr. Berlandier, in his manuscript notes, speaks of a Grebe, corresponding in size to this species, as inhabiting the lakes produced by the overflowing of the Rio Bravo del Norte, in the vicinity of Matamoras.

Dr. Merrill — the first positively to confirm the claim of this Grebe to belong to our fauna — found it a rather common resident in Southwestern Texas. Several nests, undoubtedly belonging to this species, were found by him May 16, 1877, in a salt-marsh a few miles from Fort Brown. These nests were made of water-plants and pieces of reeds slightly fastened to one or two *tulé* stalks, forming a wet floating mass. No eggs were obtained.

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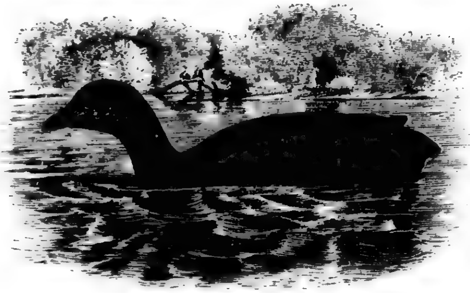
rufous spot, an eyebrow over each eye ; a postocular stripe, an oblique cervical stripe extending along the whole length of the neck, and a nuchal stripe also passing on to the neck ; cheeks, throat, and foreneck are white, varied with blackish lines, one of which extends from the chin along the whole length of the throat and neck ; two others on each side of the neck, one on the sides of the throat, and the other the whole length of the lower part of the cheeks. Back blackish gray, interspersed with white hairs ; breast and sides deep gray, mixed with whitish hairs ; middle of the under part largely white. Iris nearly black."

The eggs of the Least Grebe are of a pale chalky greenish white, varying from discolorations, and are unspotted. Those in the Smithsonian Collection are from Matamoras, Mazatlan, Cuba, and Jamaica. They vary from 1.25 inches to 1.50 in length, and from .85 to 1.00 in breadth.[1]

GENUS **PODILYMBUS**, LESSON.

Podilymbus, LESSON, Traité, I. 1831, 595 (type, *Podiceps carolinensis*, LATH., = *Colymbus podiceps*, LINN.).
Sylbeocyclus, BONAP. Saggio, 1832, 144 (same type; cf. SCL. Ibis, 1874, p. 98).

CHAR. Size medium (wing about 4.50–5.00 inches); bill very stout, the length of the culmen less than twice the basal depth; bill much shorter than the head, the culmen much curved terminally; tarsus shorter than the middle toe without claw. No tufts in summer plumage, but bill parti-colored, and throat ornamented by a black patch.



P. podiceps.

Podilymbus podiceps.

THICK-BILLED GREBE; CAROLINA GREBE.

Colymbus podiceps, LINN. S. N. ed. 10, I. 1758, 136: ed. 12, I. 1766, 223 (based on *Podiceps minor rostro vario*, CATESBY, Car. 91. — *Colymbus fluviatilis carolinensis*, BRISS. Orn. VI. 1760, 63).
Podilymbus podiceps, LAWR. in Baird's B. N. Am. 1858, 898. — BAIRD, Cat. N. Am. B. 1859, no. 709. — COUES, Key, 1872, 338; Check List, 1873, no. 614; Birds N. W. 1874, 737. — RIDGW. Nom. N. Am. B. 1881, no. 735.
Podilymbus podiceps, COUES, 2d Check List, 1882, no. 852.
Podiceps ludovicianus, LATH. Ind. Orn. II. 1790, 785.
Podiceps carolinensis, LATH. l. c. — SW. & RICH. F. B. A. II. 1831, 412. — NUTT. Man. II. 1834, 259. — AUD. Orn. Biog. III. 1835, 359; Synop. 1839, 358; B. Am. VII. 1844, 324, pl. 483.
Podilymbus lineatus, HEERM. Pr. Ac. Nat. Sci. Philad. 1854, 179; Pacific R. R. Rep. X. 1859, 77, pl. 9 (young).
Podiceps antarcticus, LESS. Rev. Zool. 1842, 209.
Podilymbus antarcticus, GRAY, Hand-l. III. 1871, 95, no. 10771.
Podilymbus podiceps, b. *antarcticus*, COUES, Birds N. W. 1874, 737.
Podiceps brevirostris, GRAY, Gen. B. III. 1839, pl. 172.

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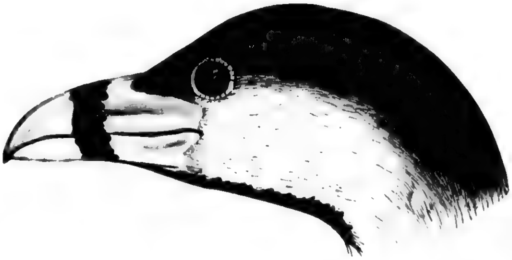
[1] "The eggs of the two layings resemble those of the *P. minor* of Europe, and are in general a little smaller. Dimensions: 36 × 25; 35.5 × 27.8; 36.3 × 27.8; 35 × 25; 37.3 × 25.7 millim." (TACZANOWSKI, Proc. Zool. Soc. Lond. 1882, p. 49).

Hab. Greater part of South America, whole of Middle America, West Indies, and temperate North America, breeding nearly throughout its range. South to Brazil, Buenos Ayres, and Chili, north to British Provinces. Bermudas.

Sp. Char. *Adult, breeding-plumage:* Chin, throat, and a spot at the base of the mandible, black; rest of the head and neck brownish gray, darker on the pileum and nape, lighter on the sides of the head, the malar region light ashy, streaked with dusky. Upper parts uniform dusky grayish brown, the remiges paler, the inner webs of the secondaries tipped with white; lower parts grayish white, everywhere spotted with dusky grayish. Bill milk-white, crossed past the middle by a black band, the terminal portion more bluish; eyelids white; naked lores bluish; iris rich dark brown, with a narrow outer ring of ochraceous-white, and an inner thread-like ring of pure white; tarsi and toes greenish slate-black on the outer, and plumbeous on the inner side.[1] *Winter plumage:* Head and neck dull brownish, darker on the pileum and nape, and becoming white on the chin and throat (sometimes also on the malar region); lower parts silvery white, brownish laterally and posteriorly; upper parts as in the summer plumage. Bill horn-color, becoming blackish basally and on the culmen; lower mandible more lilaceous, with a dusky lateral stripe; iris of three distinct colors, disposed in concentric rings, the first (around the pupil) clear milk-white, the next dark olive-brown, the outer pale ochraceous-brown, the dark ring reticulated into the lighter; tarsi and toes greenish slate, the joints darker.[2] *Young, first plumage:* Similar to the winter dress, but side and under part of the head white, indefinitely striped with brown, the throat sometimes immaculate. *Downy young:* Head and neck distinctly striped with white and black; a spot of rufous on the middle of the crown, one on each side the occiput, and one on the upper part of the nape; the latter confluent with two white stripes running down the nape, the others entirely surrounded with black; upper parts blackish dusky, marked with four longitudinal stripes or lines of grayish white running the whole length of the body; lower parts immaculate white medially, dusky grayish anteriorly, laterally, and posteriorly.


Summer adult.

Total length, about 13.25 to 15.00 inches; extent, 20.00–23.00; wing, 4.50–5.00; culmen, .75; depth of bill at base, .45; tarsus, 1.40; middle toe without claw, 1.80.

We are entirely unable to discover any tangible difference between several South American examples, in different stages of plumage, and North American specimens, and can therefore see no reason for admitting the so-called *P. antarcticus.*

The "Pied-billed" or "Carolina Grebe" is an exclusively American species, and is widely distributed. It is found throughout South and North America from Cape Horn to the Mackenzie River, and occurs on the Pacific as well as on the Atlantic coast. It is resident in Santo Domingo, Cuba, Jamaica, Trinidad, and probably in most of the West India Islands, is also resident in Central America, and probably in Mexico. To what extent it is anywhere resident, or only a visitor, is with difficulty determined, since this is not a bird whose presence is easily detected, owing to its quiet and secretive habits.

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[1] Fresh colors of an adult female killed March 24 at Carson City, Nev.

[2] From a specimen killed November 18 at Truckee Meadows, Nev.

Mr. Salvin found this Grebe a resident in Dueñas, Guatemala, where it breeds in May, making a nest among the reeds of the lake, of a pile of flags, heaped up so as just to raise the edge of the structure above the surface of the water. The eggs were generally half immersed. These were from two to five in number, and of a chalky exterior on an under surface of bluish green, measuring 1.55 inches in length by 1.08 in breadth. A specimen was taken by Dr. Cunningham near the Island of Chiloe, in the Straits of Magellan, on the 20th of March.

Mr. Bernard Ross met with it as far to the north as the valley of the Mackenzie. Mr. H. E. Dresser found it not uncommon near San Antonio, Texas, in the winter. He observed several on a pond near Matamoras in August, 1864. Another specimen — a young bird — was obtained from Fort Stockton.

Dr. Gundlach informs me by letter that he has found this Grebe breeding in Cuba, and he has sent me specimens of its eggs. I have also received its eggs from Jamaica. Mr. Gosse frequently met with it in the marshes on the banks of the Rio Cobre. When taken alive it soon becomes reconciled to confinement, and feeds readily on raw chopped fish. A bird of this species, which Mr. Richard Hill kept alive a few weeks, apparently felt great pleasure in lying on the weeds placed for him by the side of a bowl of water, from which he drank. He would there repose hour after hour, doubled up on the grass. The food given to this bird was Guinea-corn, which he ate readily after it had been softened in the water. Léotaud mentions this species as being one of the common birds of Trinidad. Its habits are precisely similar to those of *P. dominicus.* Three examples are recorded by Major Wedderburn as having been taken in Bermuda in 1849 and 1850. This Grebe is abundant in the neighborhood of Calais, Me., where it breeds.

Mr. J. A. Allen met with it in September in the valley of Great Salt Lake, Utah.

Mr. N. B. Moore, writing from Sarasota Bay, Fla., states that in the spring of 1870 he killed a bird of this species in which he found an egg of nearly full size; and in a day or two afterward found her nest, containing one egg. In April, 1873, he found another nest on the same pond. The young, five in number, stood in the nest uttering a faint peep, something like the cry of a very young duckling. They all toddled overboard on his approach. The terrified mother in the meanwhile was swimming rapidly about, frequently diving and uttering sad notes of alarm, with scarcely a feather of her back above the water. The nest was composed of broken stems of dog-fennel, matted together with a large portion of decayed and withered aquatic plants, presenting, when found, a wet, black, and soggy bed, to all appearances as uncomfortable a nest as ever fell to the lot of delicate and beautiful downy creatures such as these were. The nest was ten yards from the shore, within the pond, and situated in a thick clump of erect dead stems of the fennel where it rested on the bottom of the pond, the water being about eight inches deep. The part above the water was circular, twelve inches in breadth, the central depression being rather shallow, and an inch in depth and five or six in breadth. There was no lining, and the whole presented an appearance of solidity resembling masonry. The upper part of the rim was only about two and a half inches above the surface of the pond, and could not possibly have floated had the water risen to any height. When about three weeks old the young dive for their own food, though the mother feeds them long afterward. The young have been caught as late as September 15th, and it is probable that this bird has two or three broods in a season. This Grebe winters as far north as Puget Sound, where also it is by no means rare during the summer. Dr. Heermann states that it is found in winter about marshy lakes throughout California, and that it also breeds there. The nest is built near the edge of the water. One of the nests which Dr. Cooper found was floating in water over two feet deep, but was held in its place by the stalks of living plants, to which it was fastened by the aid of the rushes of which it was composed. Its shape was conical, and it was a foot wide at the bottom and nine inches at the top, where it was slightly hollowed out. The eggs — four in number — were white, with brownish incrustations, and of nearly equal size at both ends. The eggs found on the 11th of June at Puget Sound were just ready to hatch.

These birds are usually perfectly fearless, swimming quite near to the spectator, and trusting to their power of diving to escape from danger. They become suspicious, however, after having been shot at. They can swim to a long distance under water, merely raising the bill above the surface occasionally, and they are somewhat nocturnal in habit. In the spring they make a loud and sonorous braying noise. They feed on small fish and insects, and prefer to hunt for them in places covered with dense aquatic vegetation, being chiefly fresh-water birds, though seeking the bays in the winter. This bird has the singular habit, in common with all the other Grebes, of sinking down gradually and backwards into the water until it entirely disappears, not leaving a ripple on the surface. This it does in order to escape, when not compelled to dive quickly.

Mr. John Xantus found this Grebe at Manzanilla Bay, in Western Mexico, where it was not abundant.

In Southern Wisconsin this species goes by the name — more emphatic than euphonious — of "Hell-diver." Mr. Kumlien informs me that it breeds there both in the lake and in the mill-pond, the nest being very bulky. Of these birds in the full plumage he has seen only a single specimen, although he has obtained a great many individuals. They exhibit greater variations in size than any bird with which he is acquainted. They are found from April 13 to October 20.

Mr. B. F. Goss writes me that he has found this bird common on the lakes of Wisconsin, nesting about the 20th of May, on rushes of the previous year, in water from one to three feet deep. In such situations the old rushes are piled upon each other until the fabric rises to the top of the water; a nest formed of moss and weeds gathered from the bottom is raised but little, and is always wet except when the water has receded and left it higher than it was originally built. It appears like a circular mass of weeds and moss, about the size of a dinner plate, floating on the water, and when filled with eggs and carefully covered, it resembles a floating ball, and would be passed without notice by one unacquainted with its peculiarity. It does not, however, really float, as its foundations rest more or less perfectly on the bottom. The eggs — five in number — are white at first; but are soon stained by contact with the wet nest. Sometimes the shell is quite rough, and has a calcareous incrustation. In the absence of the bird the eggs are usually carefully covered. This is done with surprising quickness when the nest is approached, the bird always escaping unseen. The many nests Mr. Goss has examined were always alike, always in shallow water, and constructed of rushes, never of flags, grass, or weeds, however abundant these might be. The bird is very shy in the breeding-season, keeping out of sight; and even where abundant its presence may remain unsuspected. He spent several days among its haunts, and found numerous nests without seeing a single bird; and it was only by concealing himself, and watching the nest with a field-glass, that he was able to identify the species.

Eggs of this species from Cuba, [illegible], Great Slave Lake, Michigan, Illinois, and

Wisconsin are in the museum of the Smithsonian Institution. They are essentially like all the eggs of this genus in shape and colors, and vary greatly in size. Two eggs in my own collection, from Wisconsin, measure, one 1.92 inches in length by 1.20 in breadth, the other 1.68 by 1.20; while one from Dueñas, Guatemala, measures 1.63 by 1.18.

Family URINATORIDÆ. — The Loons.

Char. Swimming birds, with the feet situated far back, a well developed hallux, the anterior toes completely webbed and normally clawed; the bill straight, acute, compressed, the nostrils linear, overhung by a membraneous lobe; tail normal, but short. Nature præcocial; eggs two or three, dark-colored, and more or less spotted.

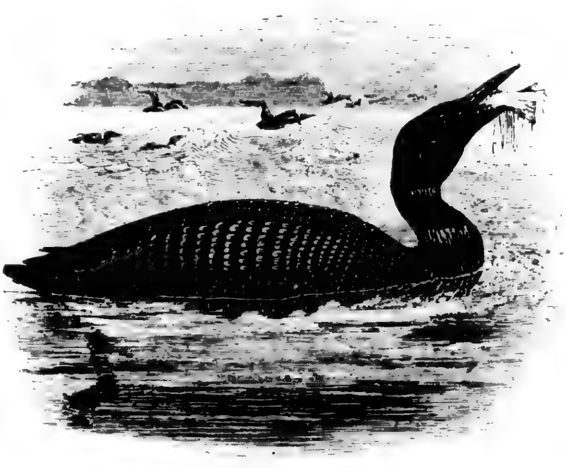
The Family includes a single genus, *Urinator*, usually, but wrongly, called *Colymbus*.

Genus **URINATOR**, Cuvier.

Colymbus, Linn. S. N. ed. 10, I. 1758, 135; ed. 12, I. 1766, 220 (part).
Mergus, Briss. Orn. VI. 1760, 104 (not of Linn. 1758).
Uria, Scop. Introd. 1777, 473 (not of Briss. 1760).
Urinator, Cuv. Anat. Comp. I. 1799, tabl. ii. (types, *Colymbi arcticus, glacialis, et septentrionalis*, Linn.).
Eudytes, Illig. Prodr. 1811, 282 (same types).

Char. The same as those of the Family.

We cannot allow our aversion for violent or otherwise distasteful changes to overrule the obvious necessities of the present case. There can be no question that the name *Colymbus*, so long used by many authors for this genus, belongs properly to the Grebes. This fact has long ago been clearly demonstrated by Sundeval and other competent authorities, and more recently by Dr. L.



U. immer, adult.

Stejneger in the "Proceedings" of the United States National Museum, Vol. 5, pp. 42, 43, as follows: —

"Linnæus united the Grebes and the Loons or Divers in the same genus, *Colymbus*; but in 1760 Brisson had already separated the Loons from the Grebes, retaining the name *Colymbus* for the latter. In 1777 Scopoli followed his example. Ten years later Latham applied the name *Podiceps* to the same group, this consequently being a mere synonyme of *Colymbus* as restricted by Brisson. As the name given by the latter author to the Loons was preoccupied, the next name, which is Cuvier's *Urinator*, is to be used. The name *Eudytes* (ILLIGER), although twelve years younger, has been generally adopted, but it must give way to the older name, for the suppression of which I see no reason."

The North American species (there are none extralimital) may be distinguished as follows: —

Synopsis of Species.

1. **U. immer.** *Adult:* Head, neck, and upper parts black, the head and neck faintly glossed with dull greenish; middle of the foreneck, and sides of the lower neck, crossed by a bar of longitudinal white streaks; upper parts handsomely dotted with white, these markings largest, and quite quadrate, on the scapulars; lower parts white. Bill black, the extreme tip only light colored. *Young:* Upper parts dusky, many of the feathers tipped or edged with plumbeous; lower parts, including under side of head and neck, white. Wing, 13.00–15.25 inches (average, 14.06); culmen, 2.75–3.50 (3.07); depth of bill through base, .90–1.05 (.96); tarsus, 2.75–3.85 (3.35); outer toe, 3.85–4.65. *Hab.* Northern part of northern hemisphere.
2. **U. Adamsii.** Similar to *immer*, but much larger, the bill very differently shaped, the head and neck glossed with violet-blue, instead of greenish, the white spots of the scapulars decidedly longer than broad, and the bill light colored. Wing, 14.85–15.45 inches (average, 15.11); culmen, 3.50–3.65 (3.59); depth of bill through base, 1.00–1.20 (1.09); tarsus, 3.25–3.55 (3.41); outer toe, 4.15–4.65 (4.34). *Hab.* Western Arctic America.
3. **U. arcticus.** *Adult:* Under side of head, with foreneck, velvety purplish black, with purplish violet gloss; upper part of head and nape smoky ash; sides of the neck with several longitudinal rows of white streaks; upper parts black, the back and scapulars with three longitudinal series of broad white bars; lower parts white. *Young:* Similar in colors to the same stage of *immer* and *Adamsii*. Wing, 12.15–13.20 inches (average, 12.55); culmen, 2.50–2.85 (2.60); depth of bill through base, .75–.80 (.78); tarsus, 2.90–3.30 (3.11); outer toe, 3.45–3.95 (3.76). *Hab.* Northern part of northern hemisphere, chiefly the Palæarctic Region and Northeastern America.
4. **U. pacificus.** Similar to *arcticus*, but decidedly smaller, with much smaller and more slender bill; occiput and nape much paler ashy — almost smoky white; black of the foreneck rather greenish than purplish. Wing, 11.20–12.25 inches (average, 11.54); culmen, 2.00–2.35 (2.15); depth of bill through base, .55–.65 (.62); tarsus, 2.70–3.00 (2.86); outer toe, 3.30–3.70 (3.47). *Hab.* Pacific coast of North America.
5. **U. lumme.** *Adult:* Head and neck ashy, the crown and nape streaked with dusky and white; foreneck with a longitudinal wedge-shaped patch of rich chestnut; upper parts dusky slate, speckled with white; lower parts white. *Young:* Similar, but lower half of head and whole foreneck white, like the under parts. Wing, 10.00–11.50 inches; culmen, 2.25; tarsus, 2.75. *Hab.* Northern portion of northern hemisphere.

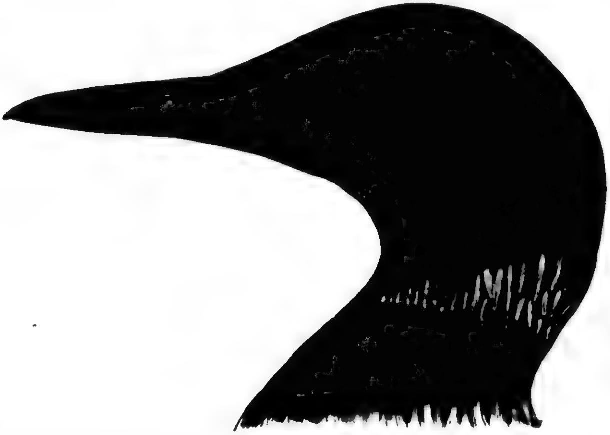
Urinator immer.

THE GREAT NORTHERN DIVER.

Colymbus imber,[1] GUNN. Trond. Selsk. Skr. I. 1761, pl. iii.
Colymbus immer, BRÜNN. Orn. Bor. 1764, 34 (young). — LINN. S. N. ed. 12, I. 1766, 222.
Urinator immer, STEJN. Pr. U. S. Nat. Mus. Vol. 5, 1882, 43.
Colymbus torquatus, BRÜNN. Orn. Bor. 1764, 41. — LAWR. in Baird's B. N. Am. 1858, 888. — BAIRD, Cat. N. Am. B. 1859, no. 698. — COUES, Pr. Ac. Nat. Sci. Philad. 1862, 227; Key, 1872, 334; Check List, 1873, no. 605; ed. 2, 1882, no. 840. — RIDGW. Nom. N. Am. B. 1881, no. 736.
Colymbus glacialis, LINN. S. N. I. 1766, 221. — WILS. Am. Orn. IX. 1824, 84, pl. 74. — RICH. & SW. F. B. A. II. 1831, 474. — NUTT. Man. II. 1834, 513. — AUD. Orn. Biog. IV. 1838, 43, pl. 306; B. Am. VII. 1844, 282, pl. 476.
Colymbus maximus, GUNN. Tr. Selsk. Skr. III. 1765, 125.
Mergus nævius, BONNAT. Enc. Méth. Orn. I. 1790, 73.
Colymbus atrogularis, MEYER & WOLF, Tasch. Vög. Deutschl. II. 1810, 449 (part).
Colymbus hyemalis, BREHM, Lehrb. Eur. Vög. II. 1824, 883.

HAB. Northern part of northern hemisphere. In America, breeding from the Northern States northward, wintering south to the Gulf of Mexico; no extralimital American record.

SP. CHAR. *Adult:* Head and neck dull black, with a greenish reflection, this brightest on the lower part of the neck; foreneck crossed by a narrow bar of white longitudinal oblong dots or short streaks; sides of the neck some distance below this crossed by a broad bar of longitudinal white streaks; upper parts black, beautifully variegated with white dots, these largest, and nearly quadrate in form, on the scapulars, minute and dot-like on the rump. Lower parts immaculate white, the sides of the jugulum narrowly streaked with black, the sides and flanks black, dotted



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[1] The preference is here given to *Colymbus immer*, BRÜNN., over *C. imber*, GUNN., only for the reason that there may be a question as to whether Gunnerus is acceptable as a binomialist. He is unquestionably as much so as Bartram, whose *identifiable* names are not challenged, and furthermore describes his species much more accurately and scientifically than did Bartram; while his diagnoses are accompanied by perfectly recognizable plates. (See STEJNEGER, Proc. U. S. Nat. Mus. Vol. 5, p. 37, and The Auk, April, 1884, p. 119.) Our reasons for preferring *immer* to *torquatus* are that the latter does not occur in the twelfth edition of Linnæus's Systema Naturæ, while the former does, and may therefore be taken by those ornithologists who do not recognize names dating earlier than 1766.

with white. Bill black, paler at the tip; iris carmine; legs and feet "livid grayish blue, their inner sides tinged with pale yellowish flesh-color; claws black, lighter at the base; webs brownish black, lighter in the middle" (AUDUBON). *Young:* Upper parts dusky, the scapulars, interscapulars, and upper tail-coverts bordered terminally with plumbeous-gray; lower parts, including malar region, chin, throat, and foreneck, white, the sides and flanks dusky brown, squamated with grayish. "Bill pale yellowish green, the ridge and tip of uppper mandible dusky; iris brown; feet dusky externally, pale yellowish flesh-color internally, webs dusky, but yellow in the middle" (AUDUBON). *Downy young:* Uniform dark fuliginous, lighter and more slaty on the throat, foreneck, jugulum, and sides, the entire abdomen velvety yellowish white, shaded with pale ash-gray exteriorly. The down short and very dense, very similar to the fur of an otter or other fur-bearing mammal.

Total length, 32.00 to 36.00 inches; extent, 52.00 to 57.50; wing, 13.05–15.25 (average, 14.06); culmen, 2.75–3.50 (3.07); depth of bill through base, .90–1.05 (.96); tarsus, 2.75–3.85 (3.35); outer toe, 3.85–4.65 (4.22). (Thirteen adults.)

Two examples from Iceland are identical with American specimens.

The Loon, or Great Northern Diver, of North America has a high northern distribution during its season of reproduction. It is found from the Atlantic to the Pacific, and breeds from about latitude 42° to within the Arctic Circle. During the winter it is found on both the western and eastern sea-coasts, from lat. 48° N. to San Diego on the Pacific, and from Maine to Florida and Texas on the Atlantic and Gulf coast. In the interior it is found as far north as it can procure food and find open water.

According to Professor Reinhardt it is a resident species in Greenland. It is common throughout the interior of the Fur Countries in the summer season, frequenting lakes and ponds. Mr. Ross procured specimens on the Mackenzie, and Mr. Murray received them from the Hudson's Bay Region. Mr. Bannister mentions this bird as common on the Island of St. Michael's, and Mr. Dall as not uncommon on the Yukon, particularly near the sea. It was obtained by Mr. Kennicott at Fort Yukon. It breeds at Kyska, and is abundant at Amchitka in July; but was not seen elsewhere among the Aleutian Islands, except at the Shumagins, where it is a summer resident, according to Mr. Dall.

Dr. Cooper states that it is abundant during the winter in San Diego Bay, and along the whole coast up to the forty-eighth degree of north latitude, and in all open fresh waters. He saw it about San Diego as late as May, where the birds were in pairs. They are found in the summer about every lake and pond in the Cascade Mountains and the Sierra Nevada. They build on the borders of these lakes, and, north of the Columbia, down nearly to the level of the sea. As soon as the young have been hatched, the males desert their mates, and repair to the salt water. Soon after this they moult, and become so bare of feathers as to be unable to rise from the water.

A specimen was taken by Dr. Holden in the Colorado River; and a single individual was secured by Mr. Dresser in Southwestern Texas.

Mr. N. B. Moore states that in Florida, in winter — usually in December — he has occasionally seen as many as eight of this species, in immature plumage, swimming in company. It does not always swallow its fish when under the water. He has frequently seen the Loon bring the fish to the surface, if large, and there attempt to swallow it. He has known this bird to be taken in a common cast-net thrown by the hand.

Mr. George A. Boardman informs me that the Loon breeds abundantly in the ponds of the neighborhood of Calais; and he has ascertained that the number of its young is invariably two. These, as soon as they are hatched, are taken by the old bird upon her back, and in this position they are carried about with her wherever she moves upon the water; they are thus kept in the rays of the sun. This she continues to do for several days, and until they have grown to a considerable size.

The Loon very rarely associates in flocks, and then only apparently from necessity — as when a limited surface of open water compels them to crowd together. During the winter, either singly or in pairs, or in small parties, they are dispersed throughout the United States. Knowing that man is its mortal enemy, this bird is constantly on the watch. When it meets a passing boat it widens the distance by immediately steering off, is active in diving, and when sitting, defies the keenest sportsman. It is a very hardy bird, and is said to live to an incredible old age. Giraud states that in 1843 an individual was killed on the eastern end of Long Island, in which was found the head of an Indian file, confined in the back of the neck, between the bone and the skin. The wound was completely healed over, and had the appearance of having been made a long time before; and it was supposed by some that the wound must have been received before the settlement of the country.

The flesh of this bird is tough, hard, and unpalatable; but it is not infrequently eaten by the fishermen.

The Loon subsists almost entirely on fish, is an excellent diver, and when alarmed, eludes pursuit by passing swiftly to a considerable distance under the water. Its habits are strictly aquatic. When, in its migrations, it passes over the land, it flies at a great height and very rapidly. In stormy weather it takes shelter in coves and creeks, and occasionally in mill-ponds.

Hearne, in his "Journey to the Northern Ocean," speaks of the Loon as being common in Hudson's Bay. It is very seldom found there near the sea-coast, but more frequently in fresh-water lakes, and usually in pairs. It makes its nest on the edge of a small island or on the margins of lakes or ponds, laying only two eggs; and it is very common to find that a sheet of water is in exclusive possession of one pair and their young.

This bird is universally known near Hudson's Bay as the Loon; and it is sometimes found so large as to weigh fifteen or sixteen pounds. The flesh, though black, hard, and fishy, is generally eaten by the Indians. It can swim with great swiftness to a considerable distance under water, and when it comes to the surface rarely exposes more than the neck. It takes wing with difficulty, flies heavily, though swiftly, and frequently in a circle round those that intrude on its haunts. Richardson speaks of its cry as being loud and melancholy — not unlike the howl of a wolf, or, at other times, the distant scream of a man in distress. He caught several in nets, in which they had entangled themselves when in pursuit of fish.

Mr. B. F. Goss, of Southern Wisconsin, writes me that this bird begins to arrive early in the spring, as soon as the ice first breaks up around the shores of the lakes and streams. During their spring migrations they are sometimes seen in large flocks; but most of these pass to the northward, only a few remaining through the season to breed. The Loon is formed for swimming and diving — the conformation of its legs being such that for it to stand on the land is nearly impossible; but in its home on the water it is a graceful and beautiful bird, swimming with the greatest ease, and diving in the most surprising manner. It can swim to a great distance under the water, sinking silently and without apparent effort; and its reappearance will be looked for in vain, even on one of our large lakes, where the view is unobstructed and the water smooth. It builds its nest about the 20th of May. This is sometimes constructed on a musk-rat's mound, but usually on a small bog, close to the edge, where the bird can slip directly into the water; it is composed of mud, moss, and aquatic plants, and though quite bulky, is seldom raised more than six inches above the water. Sometimes this elevation is barely large enough to contain the nest. There is no attempt at concealment; on the contrary, the most open situation is chosen, where the view is unobstructed in all directions. If a boat approaches, the bird glides silently into the water, rising only at a great distance, and unless closely watched, is rarely seen. Two eggs is the usual number, measuring 3.40 by 2.33 inches, the ground-color yellowish brown, covered more or less thickly over the whole egg with spots, and sometimes large blotches, of black. The shell is very hard; and when two are struck together they rattle like stones. They are never covered in the absence of the bird. The young leave the nest as soon as hatched, are expert divers, and difficult to catch, even when very small. The old bird is often very brave in their defence; on one occasion approaching close to the boat and dashing water over Mr. Goss with her wings.

Audubon states that, in Labrador, in a number of instances he found the nest of this bird several yards from the water; and where this was the case, a well-beaten path was found leading from it to the water. The nests were fifteen inches in diameter and seven inches high. He claims to have more frequently found three than two eggs — a statement that leads me to think he may have sometimes mistaken the nest of the *septentrionalis* (= *lumme*) for that of this bird. Certainly I have never seen, nor have I ever heard of, more than two eggs in a nest of this species. He gives 3.75 inches by 2.25 as the average size of its egg; ground-color a dull greenish ochrey, marked with spots of dark umber. The young, when just from the shell, is covered with a stiff black down.

In regard to the number of eggs in a nest, two is the unvarying number, so far as I know. Nuttall mentions having received three from a nest in Sebago Pond; but as he did not take them himself, it is quite possible he inferred rather than knew that they were all taken from one nest. The only apparent exception to there being but two eggs to a nest is one mentioned by Mr. Thomas B. Stearns, who, in the summers of 1877 and 1878, carefully observed the habits of this species among the lakes of Northern Maine. He collected the eggs of twelve pairs; in each instance the number in the nest was two; but in one case a third egg was in the water, and had evidently rolled out of the nest. This was fresh, and possibly its loss was supplemented, and not that there are ever at any one time three eggs in a nest. Mr. Stearns informs me that he found great differences in the structures used as nests, some being quite elaborate, others a mere scooped-out cavity in the bog or sandbank. In hardly any two cases was the behavior of the parent bird the same. In one instance she remained on her nest until the boat had approached within fifty feet, only at first lowering and trying to hide her head. In other cases the parents were very shy, and did not permit themselves to be seen. In another instance the parents kept closely about his boat, uttering mournful cries, and only removed to a safer distance after having been several times shot at. Mr. Stearns found in some cases one egg much incubated, the other quite fresh. One nest was the mere surface of a muddy bog that was floating on the surface of the water, but only partially detatched. These eggs were visible some thirty feet distant, and the hollow in which they lay was so damp that their under side was wet. Another nest had two distinct paths leading in different directions, thus furnishing two avenues of escape. In one instance the water was too shoal for the bird to dive, and she was captured alive just after her leaving her nest.

The Loon moves with difficulty on the land; but locomotion is not impossible, and when stimulated by fear it can flounder over the ground with considerable rapidity.

When kept in confinement, and crippled in wing, it will wander to quite a distance from its pond by night, and seek to escape or hide itself. If, when wounded, it falls upon the land, it will, if pursued, attempt to escape in a very rapid, though a very clumsy, manner.

In the spring the Loon may be attracted to the shore by the waving of a bright-colored handkerchief, as I have several times witnessed. On such occasions the bird seems to lay aside all its caution, and swims up to almost sure death. One person waves the attractive lure, while another keeps a steady aim, and fires when the bird is in short range and can make no successful effort to dive. In one instance my companion in the boat, Mr. Jonathan Johnson, of Nahant, shot a very old bird that behaved in a manner at first unaccountable. Its attention was fixed upon another boat, from which it moved away and directly toward us, apparently taking no notice of us, and not diving at the flash of Mr. Johnson's gun. We found that it had been blinded of one eye — which explained its not seeing us, especially when its attention was fixed elsewhere. It had evidently long before received a ghastly wound on the side and top of the head, that, strangely enough, had not proved mortal; this had partially healed over; though a portion of the skull had been shot away, and one eye was shrunken and useless. That it could have survived such a wound, and lived, as it evidently had, for months — if not years — after the injury was inflicted, showed the wonderful tenacity of life of this bird.

On another occasion a number of Loons became hemmed in by drift-ice in a small opening in Lynn Harbor. The space was too limited to permit them to escape by flying, and they did not succeed by diving in passing out into the open sea, although the distance was not more than a quarter of a mile. They seemed to have lost all presence of mind, and to be panic-stricken; and allowed themselves to be shot one after the other, though escape by diving was evidently within their reach.

Mr. MacFarlane found this species breeding in considerable numbers in the vicinity of Fort Anderson. A nest, found in June on the edge of a pond of water, was a tolerably large mass of turf, and was partially screened from observation by grass and reeds growing in its vicinity. Another nest, found in July, was composed of a large mass of decayed vegetable matter, situated on the edge of a small lake. There was a depression made by the female in the centre of this mass, on which the eggs lay. In no instance were more than two eggs found in a nest.

The specimens of the eggs of this species in the collection of the Smithsonian Institution are from Maine, Nova Scotia, Alexandria Bay, N. Y., and from Minnesota. The ground-color of the egg varies from a deep raw-umber to an olivaceous-drab. The markings are small in size, sparsely distributed, and brownish black. Three typical specimens measure 3.30 by 2.25 inches; 3.50 by 2.15; and 3.55 by 2.40.

Urinator Adamsii.

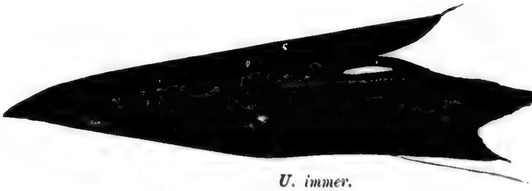
THE WHITE-BILLED LOON.

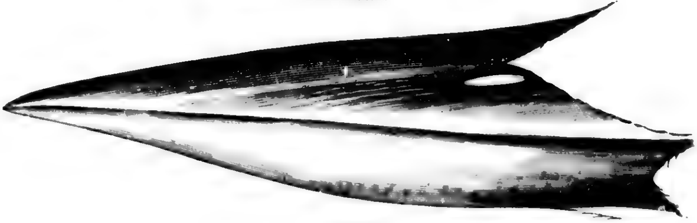
Colymbus Adamsii, Gray, P. Z. S. 1859, 167. — Coues, Pr. Ac. Nat. Sci. Philad. 1862, 227. — Ridgw. Nom. N. Am. B. 1881, no. 737.
Colymbus torquatus, var. *Adamsii*, Coues, Key, 1872, 334; Check List, 1873, no. 605 *a*.
Colymbus torquatus, b. *Adamsii*, Coues, Birds N. W. 1874, 720.
Colymbus torquatus Adamsi, Coues, 2d Check List, 1882, no. 841.
Urinator Adamsii, Stejn. Proc. U. S. Nat. Mus. Vol. 5, 1882, 43.

Hab. Arctic America, west of Hudson's Bay; casual in Northern Europe and Asia (?).

Sp. Char. Similar to *U. immer*, but much larger, the bill very different in shape and color.

the plumage also slightly different. Bill very large, much compressed, the terminal half tapering rapidly from the well-defined or even prominent angle at the base of the gonys; culmen almost perfectly straight; feathering on sides of maxilla reaching nearly to anterior end of the nostrils. *Adult:* Upper half of the head (including loral, orbital, and auricular regions), with nape, dull black, with slight brownish green reflections; lower half of head (including malar region, chin, and throat), with foreneck and lower neck, all round, blue-black, with violet-blue reflections; foreneck crossed by a bar of white longitudinal spots, these much broader than in *U. immer;* sides of the neck, below this bar, with a transverse broad patch of similar markings. Upper parts black, variegated by white dots, as in *U. immer*, but those of the scapulars much longer than broad, instead of nearly square; lower parts white, the sides of the jugulum streaked with black; sides and flanks blue-black, variegated by small round dots of white. Bill dull yellowish, dusky basally, inclining to ivory-white terminally; iris "light reddish brown; legs and feet olivaceous." *Young:* Similar to that of *U. immer*, but larger, the bill larger, deeper, more compressed, and with a decided gonydeal angle; under side of head and neck grayish white, clouded with sooty grayish brown.


U. immer.


U. Adamsi.

Wing, 14.85–15.45 inches (average, 15.11); culmen, 3.50–3.65 (3.59); depth of bill through base, 1.00–1.20 (1.09); tarsus, 3.25–3.55 (3.41); outer toe, 4.15–4.65 (4.34). (Six adults.)

So far as American specimens are concerned, this species appears to be perfectly distinct from *U. immer*, no examples at all intermediate occurring in large series of the two. It is a much larger bird in all its measurements, the bill is very differently shaped, and the plumage quite distinct in the points referred to above.

In "Birds of America," Vol. VII. p. 291, Audubon proposes a name, *Colymbus Richardsoni*, which some writers have considered as belonging to the present bird; but although specimens of what were unquestionably *U. Adamsii*, collected by Captain Ross, are mentioned in the same paragraph, the name *Colymbus Richardsoni* was clearly based upon "a very large and *handsomely crested* Diver" which Dr. Richardson saw during one of his northern journeys, and which, "although somewhat prematurely," Audubon proposed "honoring with the name of *Colymbus Richardsoni.*"

Mr. Audubon ("Birds of America," VII. 291) refers to a specimen of a Loon given to him by Captain James Clark Ross which had been procured in a very high latitude, and which, upon inspection, he found to differ from the common Northern Diver in having the point of the bill slightly recurved, and of a fine yellow tint; and Dr. Richardson also informed him that he had met with a very large and handsomely crested Diver. Regarding the latter as a new and undescribed species, Audubon proposed for it the name of *Colymbus Richardsoni.* This, however, could scarcely have been identical with the form since described as *Colymbus Adamsii.* It is common in the northwestern parts of North America, and said to be also of occasional occurrence in England, Asia, and perhaps elsewhere. We have no notes touching its specific peculiarities; and, indeed, it is not probable that these differ in any respect from those of the common Loon.

Mr. Bernard Ross mentions his having met with it in considerable numbers in Great Slave Lake. Mr. MacFarlane found it breeding, and obtained two eggs and several specimens of the bird, in the vicinity of Fort Anderson and on the shores of the Arctic Ocean. Specimens were also taken by Mr. Ross at Fort Simpson, by Mr. Clarke at Fort Rae, by Mr. J. Reid on Big Island, and by Bischoff at Kadiak.

This Loon was found to be quite common at Fort Resolution, where several specimens were obtained by Mr. Kennicott in the summer of 1860, as well as on the Yukon River. Mr. B. R. Ross secured specimens at Fort Norman and Fort Simpson. It was obtained on Peal's River by Mr. Gaudet, on Big Island by Mr. John Reid, at Fort Rae by Mr. L. Clarke, at Fort Resolution by Mr. J. Lockhart, and on the Anderson River and in its neighborhood generally by Mr. MacFarlane.

Mr. Whitely ("Ibis," 1867) and Mr. Swinhoe ("Ibis," 1867) speak of finding this species common in the spring in Yezo. Mr. E. Adams — in honor of whom this species was named by Mr. Gray — was present from October, 1850, to June, 1851, at Michalaski, Alaska, on the shores of Norton's Sound. In his notes on the birds then and there observed ("Ibis," 1878), mention is made of what is presumed to be this form, known to the natives as the *Too-oo-slik.* He did not see any himself, but he was told that this bird did not arrive before the end of August. The natives had in their possession plenty of skins, which they convert into bags for their tools.

Urinator arcticus.

THE ARCTIC LOON.

Colymbus arcticus, Linn. S. N. I. ed. 10, 1758, 135; ed. 12, 1766, 221. — Rich. & Sw. F. B. A. II. 1831, 475. — Nutt. Man. II. 1834, 517. — Aud. Orn. Biog. IV. 1838, 345; B. Am. VII. 1844, 295, pl. 477. — Lawr. in Baird's B. N. Am. 1858, 888. — Baird, Cat. N. Am. B. 1859, no. 699. Coues, Pr. Ac. Nat. Sci. Philad. 1862, 228; Key, 1872, 334; Check List, 1873, no. 606; ed. 2, 1882, no. 842; Birds N. W. 1874, 721. — Ridgw. Nom. N. Am. B. 1881, no. 738.
Urinator arcticus, Stejn. Proc. U. S. Nat. Mus. Vol. 5, 1882, 43.
Colymbus macrorhynchos, Brehm, Vog. Deutschl. 1831, 974.
Colymbus megarhynchos, Brehm, Naum. V. 1855, 300.
Colymbus ignotus, Bechst. Gemein. Naturg. Deutschl. II. 1791, 782.
Colymbus leucopus, Bechst. Naturg. IV. 1809, 625.

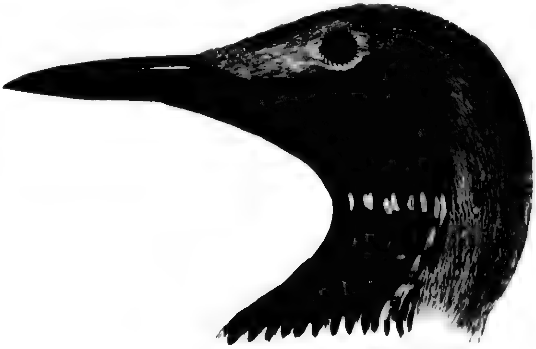
Hab. Northern part of northern hemisphere. In America, migrating south in winter, through the Eastern Province, to the Northern United States.

Sp. Char. *Adult:* Chin, throat, and foreneck velvety purplish black, with a purplish violet reflection, this black bounded sharply below, but on the sides of the head blending gradually into the color of the cheeks and lores, which are smoky slate, this color gradually fading into a rather light smoky cinereous, which occupies the whole upper part of the head and the entire nape; across the foreneck, just below the throat, a bar of white streaks; on the sides of the neck, between the purplish black of the foreneck and the ash of the nape, several longitudinal rows of black and white streaks, the latter narrowest. Upper parts deep black, the upper part of the back with two parallel longitudinal series of broad white bars, the inner scapulars with a single series of much larger but otherwise similar bars, and the wing-coverts marked with small ovate spots of white. Lower parts white, the sides of the jugulum streaked with black; entire sides uniform intense black. Bill black, the tip lighter; iris bright carmine; legs and feet "grayish blue, their inner sides tinged with yellow; claws black, that of the inner toe yellowish at the base" (Audubon).

Young: Similar to that of *U. immer*, but usually much smaller, the angle of the mandible less prominent.

Total length, about 29.00 inches; extent 39.50; wing, 12.15–13.20 (average, 12.55); culmen, 2.50–2.85 (2.60); depth of bill through base, .75–.80 (.78); tarsus, 2.90–3.30 (3.11); outer toe, 3.45–3.95 (3.76). (Five adults.)

The only North American examples of this species in the National Museum collection are from Alaska; several localities in that country being represented, as the Prybilof Islands and St. Michael's.



Summer adult.

The young of this species, particularly full-grown specimens, are sometimes difficult to distinguish from immature specimens of *U. immer;* but the measurements will in most cases determine the species, *U. arcticus* being decidedly smaller; the two comparing about as follows: —

	Wing.	Culmen.	Gonys.	Tip of bill to nostril.	Depth of bill at nostril	Tarsus.
U. arcticus, juv.	12.00	2.53	1.18	1.85	.67	3.10
U. immer, juv.	13.00 or more	3.20	1.43	2.43	.94	2.75–3.85

This species appears to be common to the Northern and Arctic Regions of the globe, though more so in some parts of the high northern regions than in others. It is very rare, and not even positively known to occur, in the United States. It is more common in the regions of Hudson's Bay, and thence westward. On the Pacific it is replaced by the *pacificus*, similar, but of smaller size and weaker bill.

Mr. Murray procured specimens on Hudson's Bay, and Hearne ("Journey," p. 430) refers to the presence of this Diver in the same region, and speaks of it as being about the same size as *U. immer*, and more beautiful than that bird. It is extremely watchful, diving at the flash of a gun, and being of course very rarely killed, except when on the wing. Its flesh is quite as dark and fishy as that of the common Loon, but it is always eaten by the Indians. The skin of this bird is very thick and strong, and is frequently dressed with the feathers on, and made into caps for the Indian men. This Loon is also spoken of by Dr. Richardson as being common on the shores of Hudson's Bay, but very rarely seen in the interior. He mentions the fact that the skins both of the common Loon and of this species are tough and impervious to wet, and says that they are used both by the Indians and the Eskimos as materials for dress.

According to Mr. Kumlien, this species breeds, but is not common in Kingwah Fiord, where it was first seen June 24. A few individuals were seen in autumn near Grinnell Bay. He was informed by Governor Fencker that it is not found in North Greenland. Only a single individual is known to have been taken so far south as Point Lepreau, in the Bay of Fundy.

The Messrs. Godman met with this species in Norway, but did not regard it as common there. They found one nest on a small island close to the shore of an inland lake. Mr. Wheelwright states that it breeds commonly all over Scandinavia from the north of Scania to far up into Lapland and Finland, but principally in the interior of those regions. Sommerfeldt mentions that every winter the Black-throated Divers are seen off the north coast in Varanger Fiord. They are met with also on the Bohus-län coast all through the year.

This bird was found in the Barrens (*Tundras*) of Northern Siberia by Middendorff; and Von Heuglin, while he did not meet with it about Nova Zembla, states that he saw examples not infrequently, in pairs, in Jugor Straits and the Kara Sea.

Mr. H. Whitely found it common in the harbor of Hakodadi, Japan; it was very shy and difficult of approach.

Audubon speaks of having found the young of this species scattered over the United States as far as Texas; but as this species is not now found anywhere, and is unknown within our limits, we naturally infer that he was mistaken, and that he must have confounded with it immature birds of another species. He certainly was in error in quoting Mr. Townsend as including it in his List of Birds found on the Columbia, in which list it is not given. Audubon met with a few pairs of these birds in Labrador, but procured no specimens, and did not find them nesting. This Loon has almost as powerful a flight as the Great Northern Diver, and flies with even greater velocity.

In the British Islands the Black-throated Diver is given by Mr. Yarrell as being the rarest of the Loons, occurring but seldom on the southern shores. Young birds are the more common, and are occasionally brought to the London market. Birds in the mature plumage have been taken in the summer, but very rarely.

Mr. Selby states that the Black-throated Diver dives with the same ease and as perseveringly as do the other species, and can remain long submerged, traversing a great distance in its submarine flight; as was experienced by himself and Sir William Jardine when in chase of one of these birds, in a light boat on Loch Awe. Their utmost exertions could not bring the Loon within range, and they were often foiled by its returning on its former track and reappearing in a direction contrary to that in which it had seemed to dive. It was frequently lost for several minutes, and would then come up a quarter of a mile ahead. Its progress under the water was estimated to have been not less than eight miles an hour. He saw a pair toward the end of June, but did not succeed in detecting their place of nidification. Their food seemed to be fish, aquatic insects, and such other articles as they could procure on or under the water.

In Sutherlandshire Mr. Selby found this species on most of the lochs of the interior. At the foot of Loch Shin he found its nest, or rather the two eggs on the bare ground, on a small islet, removed about ten or twelve feet from the water's edge. The female was in the act of incubation, sitting horizontally, and not in upright position on the eggs. When shot at she immediately dived off to her mate, who was at a short distance. His pursuit of them was quite ineffectual. Their submersion continued two minutes at a time. They came up fully a quarter of a mile distant from the spot where they went down; and where they would reappear it was impossible to calculate. In no instance did they attempt to escape by taking wing. A visible track from the water to the eggs was made by the female, whose progress upon the land is effected by shuffling along upon her belly, while being propelled by her legs behind.

A pair, attended by their young, did not attempt to dive on being approached, but kept swimming around their young, which were of tender age, and were easily approached and shot. The egg is described as measuring 2.75 inches in length by 1.83 in breadth, and as having a ground of a dark olive-brown, thinly spotted with a dark umber-brown.

This species breeds in the Hebrides, and is found at all seasons in the sounds and bays of the Orkneys. Mr. Richard Dann states that it makes its first appearance in the spring with the breaking-up of the ice on the lakes, never failing to show itself within twelve hours of the appearance of open water. After the young are hatched, both male and female are very assiduous in bringing them food, are then much on the wing, and may often be seen to fly at a vast height, with fish in their beaks, from one lake to another, and in alighting, to descend very suddenly in an oblique direction. The cries of this species during the breeding-season are said to be very peculiar. On the approach of winter it retires to the west coast of Norway; and the young birds, migrating to more temperate climates, are found on the open parts of the Baltic, in the Elbe, and on the coast of Holland.

A single specimen was obtained by Mr. Elliott on the Prybilof Islands. It was found dead on the sea-beach at Zapadnee, St. George's Island, and brought to him by the natives, who differed in opinion as to whether it had ever been seen before about the islands or not. It was the typical *U. arcticus*, and not *U. pacificus*.

Mr. Nelson speaks of the Black-throated Loon as being a rare winter visitant upon Lake Michigan. One specimen, secured near Racine, is in the collection of Dr. Hoy; and a second specimen was taken near Milwaukee, and is also preserved in the museum of that city.

Urinator pacificus.

THE PACIFIC DIVER.

Colymbus pacificus, LAWR. in Baird's B. N. Am. Sept. 23, 1858, 889 (California; Puget's Sound). — BAIRD, Cat. N. Am B. 1859, no. 700. — COUES, Pr. Ac. Nat. Sci. Philad. 1862, 228. — RIDGW. Nom. N. Am. B. 1881, no. 739.

Colymbus arcticus, var. *pacificus*, COUES, Key, 1872, 335; Check List, 1873, no. 606 *a*.

Colymbus arcticus, b. *pacificus*, COUES, Birds N. W. 1874, 721.

Colymbus arcticus pacificus, COUES, Key, 1882, no. 843.

Urinator pacificus, STEJN. Proc. U. S. Nat. Mus. Vol. 5, 1882, 43.

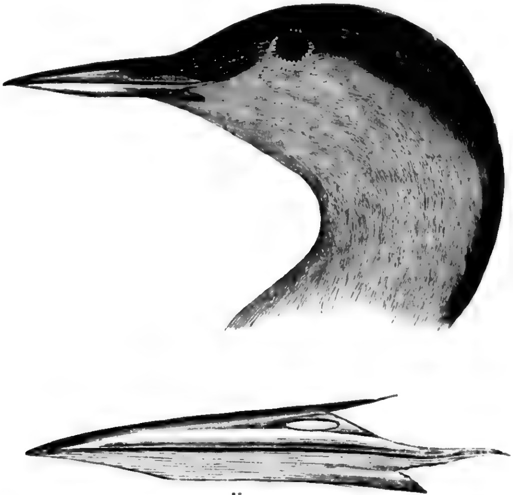
HAB. Pacific coast of North America, south in winter to the extremity of Lower California and Guadalupe Island.

SP. CHAR. Similar to *U. arcticus*, but smaller, the bill much smaller, straighter, slenderer, and more pointed, and the colors somewhat different. *Adult:* Occiput and nape very pale ashy, or almost smoky white, much paler than in *U. arcticus;* white bars on the scapulars proportionately broader, black streaks on the sides of the jugulum narrower, and black of the foreneck less purplish, than in *U. arcticus.*

Wing, 11.20–12.25 inches (average, 11.54); culmen, 2.00–2.35 (2.15); depth of bill through base, .55–.65 (.62); tarsus, 2.70–3.00 (2.86); outer toe, 3.30–3.70 (3.47). [Fourteen adults.]

Although closely resembling *U. arcticus*, and unquestionably from the same parent stock, the characters of this form are so constant as apparently to warrant our considering it in the light of a species which has passed the "incipient stage." Careful measurements of the two show that, so far as the large series examined is concerned, their dimensions scarcely inosculate (those of the bill not at all), while the peculiarities of color pointed out above are constant throughout the series, which includes, besides five perfect specimens, a large number of heads and necks, which all show the grayish white coloration of the occiput and nape characteristic of this species. The comparative measurements of *arcticus* and *pacificus* may be best shown by the following figures : —

	Wing.	Culmen.	Depth of bill at base.	Tarsus.	Longest toe.
Maximum of *U. pacificus*,	12.25	2.35	.65	3.00	3.70
Minimum of *U. arcticus*,	12.15	2.50	.75	2.90	3.45
Average of *U. pacificus*,	11.54	2.15	.62	2.86	3.47
Average of *U. arcticus*,	12.55	2.60	.78	3.11	3.76



Young.

Mr. Kennicott met with the Pacific form of the Black-throated Diver breeding on the edges of lakes, and mentions finding a nest in water about eighteen inches deep, in grass at the edge of a long, narrow lake. It consisted of a mere pile of hay, like the nest of a Grebe, with the top very little above the surface of the water. Another was in the grass at the edge of a lake, built like a Grebe's nest, but larger.

Mr. Bannister speaks of this bird as being common at the Island of St. Michael's. Mr. Dall states that the skins are much sought for by the natives, and are obtained while the birds are breeding in the shallow lagoons, where they cannot dive, and where they are netted in great numbers; the eggs were obtained at Fort Yukon. Mr. Ross mentions finding a few birds of this species on the Mackenzie River.

Dr. Cooper speaks of this form as quite common in the winter as far south as San Diego. From the fact of his having killed a female in May, he thinks that it may breed in the mountain lakes, though not yet observed there, in summer. In its habits it closely resembles the *U. immer;* but he has never known it to scream or to utter any sound. This silence may be attributable to the season.

Mr. MacFarlane found it breeding in considerable numbers in the vicinity of Fort Anderson. The nests were usually on the borders of small lakes, sometimes a mere hole in the turf with a slight sprinkling of feathers therein, or a mere piece of turf without lining, hardly above the level of the water, or a mass of decayed vegetable matter with a slight depression in the centre, on the edge of and in the water. In another instance the nest was composed of a piece of turf about two feet square, on the border of a small lake, and nearly four feet from the shore. A hole had been scooped in the centre of the turf, in which the eggs were found lying on a very few withered reeds. In the record, of one hundred and five nests, made by Mr. MacFarlane, in no instance were there more than two eggs in a nest.

Mr. Adams ("Ibis," 1878) mentions this species as always to be met with, after the first week in June, in the shallow bays along the coast of Norton Sound, where these birds kept up a continual screaming throughout the day. They were said to breed there; but he was not able to verify the truth of the statement.

The localities in the northern regions in which this Diver has been procured are as follows: Fort Rae, Great Slave Lake, Fort Yukon, and the Yukon River generally, by Mr. Kennicott; Fort Rae, by Mr. B. R. Ross and Mr. L. Clarke; Fort Yukon, by Mr. J. Sibbiston and Mr. S. Jones; Anderson River, Fort Anderson, the Barren Grounds, Arctic coast, Rendezvous Lake, etc., by Mr. MacFarlane; on the islands in Liverpool Bay, islands in Franklin Bay, on Stuart's Island, by Mr. Pease; at Sitka, by Mr. Bischoff; among the Gens de Large Mountains, by Mr. McDougall.

The eggs of this species have a ground-color varying from a deep umber to a pale greenish gray. The markings, like those of the *torquatus* (= *immer*) and the *septentrionalis* (= *lumme*), are of a deep brownish black. Three eggs from the Yukon have these measurements: 2.95 by 2.00 inches; 3.00 by 2.00; 3.25 by 1.85.

Urinator lumme.

THE RED-THROATED LOON.

Colymbus lumme, GUNNER. Trond. Selsk. Skr. I. 1761, pl. ii. fig. 2. — BRÜNN. Orn. Bor. 1764, 39 (adult).

Urinator lumme, STEJN. Pr. U. S. Nat. Mus. Vol. 5, 1882, 43.

Colymbus septentrionalis, LINN. S. N. I. 1766, 220 (adult). — SW. & RICH. F. B. A. II. 1831, 476. — NUTT. Man. II. 1834, 519. — AUD. Orn. Biog. III. 1835, 20, pl. 202; Synop. 1839, 354; B. Am. VII. 1844, 299, pl. 478. — LAWR. in Baird's B. N. Am. 1858, 890. — BAIRD, Cat. N. Am. B. 1859, no. 701. — COUES, Key, 1872, 335; Check List, 1873, no. 607; ed. 2, 1882, no. 844; B. N. W. 1874, 724. — RIDGW. Nom. N. Am. B. 1881, no. 740.

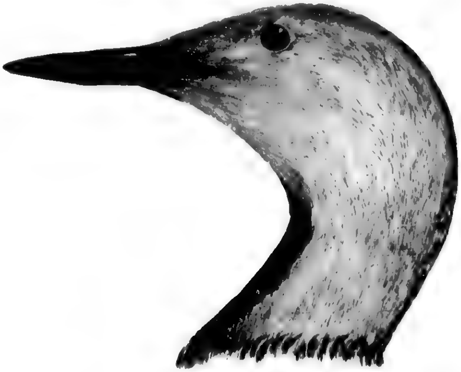
Colymbus stellatus, BRÜNN. t. c. no. 130 (young).

Colymbus borealis, BRÜNN. t. c. no. 131.

Colymbus striatus, GMEL. S. N. I. ii. 1788, 586 (young).

Colymbus rufogularis, MEYER, Tasch. Deutsch. Vög. II. 453 (adult).

Colymbus microrhynchos, BREHM, Naum. V. 1855, 300.



Adult, summer plumage.

Hab. Northern part of the northern hemisphere, south in winter nearly across the United States.

Sp. Char. *Adult, summer plumage:* Head and neck soft velvety cinereous, the crown streaked with dusky; nape dusky, streaked with white; a longitudinal, wedge-shaped patch of rich chestnut covering the foreneck, the lower, truncated, edge adjoining the white of the jugulum, the upper point reaching to the lower part of the throat. Upper parts dusky slate, more or less speckled with white. Lower parts entirely pure white, except along the sides, beneath the wings, and on the crissum, where more or less mixed with slate-color. Bill deep black, the extreme point yellowish, and the culmen sometimes bluish; iris carmine; "tarsi and toes bluish white, each joint of the latter, and the whole of the outer toe, black" (L. M. Turner, MS.). *Winter plumage:* Similar to the above, but the whole lower half of the head, with entire foreneck, white, the nape and upper half of the head uniformly marked with broad streaks of dusky and narrower ones of white, and the upper parts more uniformly and distinctly speckled with white. Bill brownish or grayish. *Downy young:* "The young are at first covered with a dense elastic down of a grayish black color, tinged with brown. The bill is bluish black, its basal edges yellow; the iris reddish brown" (Audubon).

Total length, 23.00–26.00 inches; extent, 38.50–43.00; wing, 10.00–11.50; culmen, 2.25; tarsus, 2.75.

The Red-throated Diver is an Arctic species common to all parts of the northern hemisphere, found in equal abundance in Asia, Europe, and America, in summer breeding to the highest extent of available lands, and in winter wandering southward to a varying and indefinite extent.

According to Professor Reinhardt, this is a resident species in Greenland. Captain Blakiston cites it as procured from Hudson's Bay; Mr. Bernard Ross, as abundant on the Mackenzie River. Hearne ("Journey," p. 430) states that it is also known as a Loon in Hudson's Bay, but that it is far inferior in size to the other species of Loon, seldom weighing more than three or four pounds. This bird, as well as the other species, is an excellent diver. It always feeds on fish; and while in pursuit of its prey, frequently becomes entangled in the fishing-nets set at the mouths of creeks and small rivers. It is the most numerous species, and frequently flies in considerable flocks. Like the other Loons, it makes its nests at the edge of the water, and lays two eggs, which, though very rank and fishy, are always eaten, as well by the English residents as by the Indians.

Mr. Kumlien found this Loon very common in all the localities visited by him, beginning to nest on the Upper Cumberland waters about the last of June, the eggs being placed on the bare rocks, with very little grass or moss beneath them. The birds were very noisy during the mating-season, and remained as long as the water was open.

Sir John Richardson states that the Red-throated Diver frequents the shores of Hudson's Bay up to the most northern extremity of Melville Peninsula, and that it is also abundant on the interior lakes. It is said to lay two eggs, by the margin of the water. The eggs brought home by Parry were 2.92 inches in length and 1.75 in breadth, and of a pale oil-green color, blotched with umber.

This species is found on the Atlantic coast only as a migrating visitor in spring and fall. At the latter season the visitors are principally young birds. Giraud states that it rarely occurs on the coast of Long Island except in the immature plumage. Dr. Wood states ("American Naturalist," III. 518) that immature birds of this species are very common in Long Island Sound, but that the adult is never, so far as he knows, seen there.

According to Dr. Cooper, it is found on the Pacific coast as far south as San Diego. It is more rare than are the two other species of Loons. Dr. Heerman obtained one example at San Diego; and Dr. Cooper procured another — a fine male — at Santa Barbara, in 1863, as late as April 27.

Mr. E. Adams found it quite common on the shores of Norton Sound ("Ibis," 1878). The first example arrived there May 21, and soon afterward most of the larger lakes had at least one pair of them as tenants. They seldom went out to sea — and then apparently only for the purpose of feeding — but were continually flying about the marshes, and diving and screaming upon the lakes. He describes this Loon as being a "complete Mocking-bird" in its imitation of harsh sounds, its cry resembling by turns the squalling of a cat, the barking of a dog, the shrill laugh of a man, or the quacking of a Duck; and sometimes all these sounds are united in one loud scream, as the bird dives into the lake in play. The nests were numerous, and generally placed quite close to the water, on the banks of the lake. They consisted merely of a little loose grass in a hollow; a few were more carefully formed, though none were lined with feathers or down. The eggs were two in number, of an olive-greenish color, thinly spotted with dark brown.

Mr. Bannister found this species abundant on the Island of St. Michael's. Mr. Dall speaks of it also as being common at the mouth of the Yukon. A single specimen was procured on the rapids of the Yukon in July, 1867. Mr. Dall also found it very abundant at Amchitka, in July, where it was breeding. It was seen nowhere else in the Aleutian chain, and there it is only a summer resident. Six or eight were observed at a time in the harbor of Amchitka, quite bold, and usually appearing in the early morning or the dusk of evening. Crossing the island, Mr. Dall observed a female with one young bird swimming in a pool of fresh water. Alarmed at his approach, the mother settled down into the water until only her neck appeared above the surface, when the little one immediately took up its position on her back. Wishing to procure the plumage of the fledgling, he shot the young bird and picked it up. Just then the male arrived from the coast with a small fish in his mouth, intended for the young bird. Not seeing it, he uttered a mournful cry, which was replied to by the female, who had remained in the pool without attempting to escape. For some minutes these cries were kept up, when both birds took wing and disappeared, still uttering low moaning cries.

According to Mr. Swinhoe, several of these birds wander down during the winter to the coast of Formosa from the north; but very few show any indications of the Red-throat, nearly all being in their winter plumage.

Mr. H. Whitely obtained a single example of this species at Hakodadi, Japan, in January; and Mr. Swinhoe has since met with it there in May ("Ibis," April, 1874). It is given by Mr. T. L. Powys as occurring sparingly on the coast of Epirus and Albania in winter.

Mr. C. A. Wright ("Ibis," 1864) mentions it as occasional at Malta. Schembri saw one in 1839, and another in 1841; and four birds in immature plumage were taken at Gozo in the winter of 1858–1859.

Mr. Wheelwright states that it is common in Lapland during the summer, but not nearly as much so as the Black-throated species, in the midland districts. Both of these Divers are said to cover up their eggs when they leave their nests, in the manner of the Grebes; but this cannot be always the case, as in every instance Mr. Wheelwright found the eggs uncovered. The Messrs. Godman also speak of it as being abundant in Norway during the summer months. Almost every pond and small lake had its pair, and many eggs were collected.

Professor Newton states that this species breeds in Spitzbergen as far north as the Seven Islands, lat. 80° 45′. Eggs from Depot Holm and other places were obtained by the Swedes. A young bird was found on one of the Thousand Islands; and Professor Newton saw a pair of old ones on Russö, which evidently had a nest not far off. It seemed to be pretty generally, but sparingly, distributed throughout the whole region. It is said by Dr. Malmgren to feed its young on a species of *Apus* which he found in plenty in the fresh-water pools on the Star Fiord.

This species was found by Middendorff inhabiting the *tundras* of Northern Siberia; and Von Heuglin, in his account of the birds of Nova Zembla ("Ibis," 1872), states that he found it breeding in Matthews' Straits.

According to Yarrell, it is only a winter visitant of England and Ireland, occurring on all parts of the coast. A few breed in the Orkney and Shetland Islands, and probably in other of the northern islands. Rev. Mr. Low, in his "Natural History of the Orkneys," accuses it of making a vast howling, and sometimes a croaking noise, which is believed to prognosticate rain; and hence its name of "Rain-goose."

Mr. Robert Dunn states that these Loons lay their eggs so close to the water's edge that the bird can touch the water with its bill while sitting. He has invariably found the egg not more than three inches from the water's edge, and usually deposited among a few loose stones.

Mr. Hewitson speaks of the cry of this bird as being a loud and singular scream; Mr. Richard Dann characterizes it as very mournful and melancholy. During the breeding-season, while on the wing, the birds frequently utter a sound like the word *kakera-kakera;* and by this name they are known in many parts of Scandinavia.

Mr. Yarrell describes its eggs in his cabinet as averaging 2.66 inches in length by 1.82 in breadth. The ground-color is of a dark greenish brown when fresh, but changes a little, and becomes a chestnut or dark reddish brown when the egg has been long incubated. It is rather thickly spotted with dark umber-brown.

According to Audubon, this species begins to breed in Labrador in the beginning of June. The nests consist of a few blades of grass loosely put together, and quite flat, and without any down. The male incubates as well as the female. The young birds dive beautifully, and swim with great buoyancy. By the hunters and fishermen on the New England coast this bird is called the "Cape Racer."

Mr. MacFarlane observed it breeding in the neighborhood of Fort Anderson and on the Arctic coast. Two eggs found July 2 were on a very small island, about two feet square, and so small that one of the eggs was found at the bottom of the lake on the borders of which the nest was situated. This was simply a slight depression in the turf of which the island was composed; and others were found almost identical in character with this. This species was not very numerous in the neighborhood of Fort Anderson. Sixteen nests are described by Mr. MacFarlane, in all of which the maximum number of eggs is two.

It is of occasional occurrence in the interior, on the great lakes, and more rarely on smaller ones. These are usually noticed in the fall, are immature specimens, and occur singly. Professor Kumlien procured one in October, 1873, on Lake Koskonong, in Southern Wisconsin.

It was met with, and examples secured, on the Liard River and at Fort Resolution by Mr. Robert Kennicott; on the Anderson River, on Bear Lake, at Fort Simpson, and on Big Island by Mr. B. R. Ross; at Fort Rae by Mr. L. Clarke; on Big Island by Mr. John Reid; on Anderson River and the Arctic coast near its mouth, on the Barren Grounds, Franklin Bay, and at Fort Anderson, by Mr. MacFarlane; at Sitka and St. Michael's by Mr. H. M. Bannister and Mr. Charles Pease; on the Yukon River by Mr. Dall; and at Fort Kenai by Mr. Bischoff.

The eggs of this species in the Smithsonian collection are from Great Slave Lake, the Yukon River, Sitka, Anderson River, and Greenland. The ground-color varies from a deep reddish umber, or a deep raw umber, to a grayish green. The markings are usually small, sparse, and of a brownish black. The eggs vary in their length from 2.65 to 3.00 inches, and in their breadth from 1.70 to 1.85.

FAMILY ALCIDÆ. — THE AUKS.

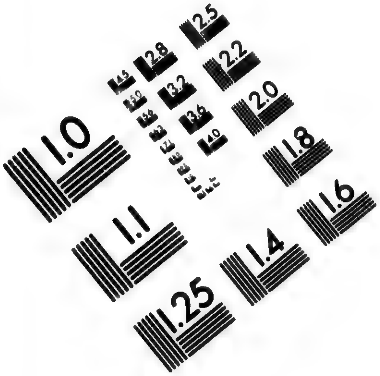
CHAR. Swimming birds with the feet situated far back, the anterior toes fully webbed, and armed with strong claws, the hallux entirely absent. Lores feathered; tail normal, always short; nostrils without overhanging membrane. Bill excessively variable in form.

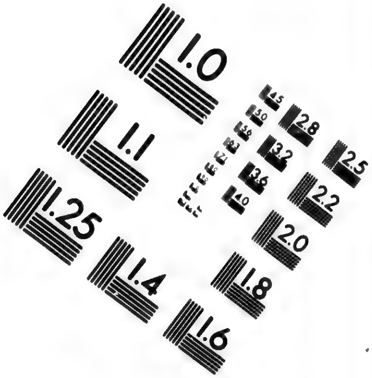
The above diagnosis, though brief, is quite sufficient to distinguish this family from that most nearly related — the *Urinatoridæ* — which differs essentially in the possession of a well-developed hind toe, and in the nostrils being overhung by a membrane. The different genera exhibit remarkable extremes of form, especially of the bill (the variation of other parts being comparatively trifling), and, to a less extent, of size.

All the genera, and most, if not all, of the species, are American, the family being of circumpolar distribution, with few, if any, forms peculiar to either continent, the chief difference being between the North Pacific and North Atlantic representatives.

Following is an arrangement of the genera which is believed to express very nearly the natural affinities of the various forms: —

A. Inner claw normal (not larger or more curved than the others). No tumid "rosette" at angle of mouth.
  a^1. Mental apex much nearer to tip of bill than to nostril; carotid single (double in all other *Alcidæ*, so far as known).
    Sub-family ALLINÆ.
    1. **Alle.** Bill short and very broad, the width at the base about equal to the depth and to the distance from the nostril to the tip. Nasal operculum completely exposed. Gonys very short, being less than the width of the space between the mandibular rami at a point immediately beneath the nostril. Size small (wing less than 5.00 inches).
  a^2. Mental apex much nearer to nostril than to tip of bill.
    b^1. Sub-family ALCINÆ. Nasal fossæ completely filled with dense velvety feathering, extending to or beyond anterior end of nostrils.
      c^1. Bill very deep, the culmen very strongly convex, the maxilla (sometimes mandible also) with very distinct obliquely transverse grooves. Tail graduated, the feathers pointed. (*Alceæ.*)
    2. **Plautus.** Largest of the *Alcidæ*. Wings rudimentary, not admitting of flight. Bill equal to the head in length, the mandible with numerous transverse sulcations.
    3. **Alca.** Size medium. Wings well developed, admitting of sustained flight. Bill much shorter than head, the mandible with but one or two well-defined sulci (or none).
      c^2. Bill more slender, the culmen slightly or gently convex, both mandibles destitute of transverse grooves. Tail rounded, the feathers not pointed. (*Urieæ.*)
    4. **Uria.** Size of *Alca*.
    b^2. Sub-family PHALERINÆ. Nasal fossæ only partly feathered, the feathering never reaching anterior end of nostrils, the nasal operculum always completely exposed.
      c^1. Bill slender, compressed, nearly as long as the head, the culmen straight to near the tip, where abruptly decurved; gonys nearly straight, ascending to the tip from the angle, which is situated nearer the tip than the base of the mandible. Loral apex forming an acute angle. (*Cepphеæ.*)





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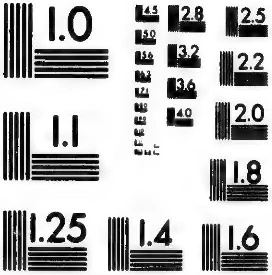

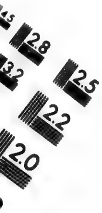
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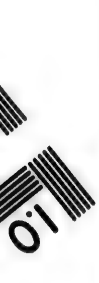
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5. **Cepphus.** Size medium (wing about 6.50 to 7.50).

c^2. Bill exceedingly variable in form, but never curved abruptly at the tip, always (except in *Cerorhyncha*) much shorter than the head, the gonydeal angle much nearer the base than the tip of the mandible (except in *Synthliboramphus*).

d^1. Distance from anterior border of nasal fossæ to nearest feathering one fourth, or less than one fourth, of the distance from the same point to the tip of the maxilla. (*Brachyrampheæ.*)

6. **Brachyramphus.** Tarsi reticulate in front, not longer than the maxillary tomium (measured to base of horny portion); bill moderately compressed, the depth through the base decidedly less than one half the culmen. Size small (wing less than 6.00 inches).

7. **Synthliboramphus.** Tarsi scutellate in front, much longer than the maxillary tomium; bill much compressed, the depth through the base much more than half the culmen. Size of *Brachyramphus.*

d^2. Distance from anterior border of nasal fossæ to nearest feathering one half, or more, the distance from the same point to the tip of the maxilla. (*Phalereæ.*)

8. **Ciceronia.** Bill small, without accessory pieces, except a small compressed knob at the base of the culmen in the breeding-season. Head without crests, but ornamented (in the adult) with white acicular feathers over frontal and loral regions. Size smallest of the *Alcidæ* (wing less than 4.00 inches)

9. **Phaleris.** Similar to *Ciceronia*, but culmen destitute of knob, even in breeding-season, the head ornamented with a long, slender, recurved crest on the fore part of the crown, several long, slender, whitish filaments springing from above the eye, a postocular series of long, slender, pointed, white feathers, and a similar series crossing the cheeks. Size a little larger than *Ciceronia* (wing about 4.50 inches).

10. **Simorhynchus.** *In the breeding-season:* Covering of the bill complicated by the following accessory pieces, all of which are shed before winter: base of mandibular rami developed into a prominent broad plate, curving upward to the rictus; base of maxillary tomia developed into a large semicircular concave plate. A frontal recurved crest, as in *Phaleris*, but no other ornaments except a postocular line of narrow, pointed, white feathers. *In winter:* Bill simple, as in *Phaleris.* Size larger (wing 5.00 inches or more).

11. **Cyclorhynchus.** Bill without accessory pieces; much compressed, very deep, with rounded outlines, the depth through the base equal to the chord of the culmen; the latter decidedly convex; mandible falcate, or strongly recurved, and sharp-pointed. A single line of pointed white feathers behind the eye. Size of *Simorhynchus.*

12. **Ptychoramphus.** Bill without supernumerary pieces, and head without ornamental feathers. Bill elongate-conical, the maxilla much broader than deep at the base; culmen nearly straight, and gonys likewise little curved, but decidedly ascending from the mental angle. Nasal fossæ very large (occupying nearly the basal half of the mandible). Size small (wing about 5.00 inches).

13. **Cerorhyncha.** Bill large and much compressed, nearly as long as the head, height nearly half the length, the culmen strongly curved, the gonys slightly concave, the mental angle being very prominent. Cere surmounted in the breeding-season by a prominent vertical compressed knob or horn. Adult with a postocular and mystacial series of narrow, pointed white feathers. Size large (wing about 7.00 inches).

B. Inner claw much larger and more strongly curved than the others. A tumid "rosette" at the angle of the mouth.

Sub-family FRATERCULINÆ. Bill excessively compressed, its depth at the base nearly or quite equal to the chord of the culmen, the terminal half transversely grooved, the basal portion ornamented in the breeding-season by a greater or less number of supernumerary deciduous pieces.

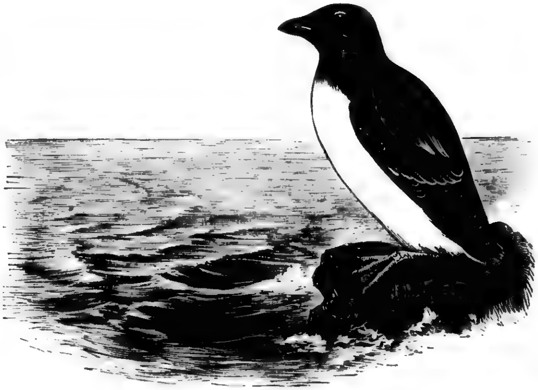
14. **Fratercula.** Deciduous nasal shield, rapidly diminishing in width toward the top; basal outline of the mandible concave; maxillary sulci and anterior outline of the nasal shield with the concave sides posterior; terminal half of mandible obliquely sulcate; eyelids furnished with deciduous horny plates; head not tufted.

15. **Lunda.** Deciduous nasal shield rapidly increasing in width toward the top, where forming an arched and much thickened ridge; basal outline of the mandible convex; maxillary sulci and anterior outline of the nasal shield with the concave sides anterior; terminal half of mandible perfectly smooth; eyelids without horny plates; adult furnished with elongated, pendent, silky, ornamental supra-auricular tufts.

Genus **ALLE**, Link.

Alle, Link, Beschr. Nat.-Samml. Univ. Rostock, I. 1806, 17 (type, *A. nigricans*, Link, = *Alca alle*, Linn.). — Coues, Bull. Nutt. Orn. Club, IV. Oct. 1879, 244.
Mergulus, Vieill. Analyse, 1816, 66 (type, *Alca alle*, Linn.).

Char. Size small (wing about four and a half inches). Bill very short and thick, the culmen strongly convex, the gonys exceedingly short (less than one third the culmen) and straight; mandibular rami widely separated, the interval filled by a very broad, densely feathered area, extending nearly to the tip of the bill; nasal fossæ semicircular, the lower third occupied by the nostril. Head, neck, and upper parts black, the under side of the head and neck white in winter; lower parts white, and scapulars streaked with white, at all stages.



A. nigricans, summer dress.

The single species of this genus is the well-known Sea Dove, or Dovekie, abundant along the coast of New England in winter, but breeding much farther north.

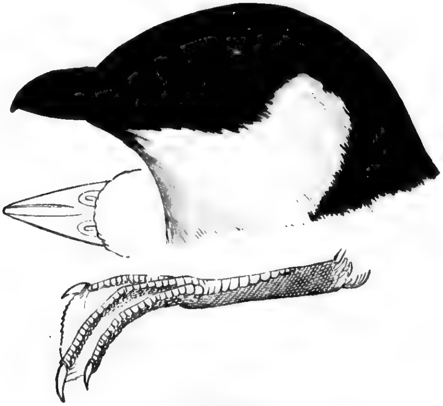
Alle nigricans.

THE SEA-DOVE; DOVEKIE.

Alca alle, Linn. S. N. ed. 10, I. 1758, 131, no. 6; ed. 12, I. 1766, 211, no. 5. — Wils. Am. Orn. IX. pl. 74, fig. 5.
Uria alle, Pall. Zoog. Rosso-As. II. 1826, 369. — Aud. Orn. Biog. V. 1838, 304, pl. 339.
Mergulus alle, Vieill. Analyse, 1816, 66; Gal. Ois. 1825, 236, pl. 295. — Gould, B. Eur. V. 1837, pl. 402. — Cass. in Baird's B. N. Am. 1858, 918. — Baird, Cat. N. Am. B. 1859, no. 738. — Coues, Pr. Ac. Nat. Sci. Philad. 1868, 54; Key, 1872, 343; Check List, 1873, no. 626.
Alca candida, Brünn. Orn. Bor. 1764, 26, no. 107 (albino?).
Alca alce, Gmel. S. N. I. 1788, 554.
Mergulus melanoleucus, Leach, Syst. Cat. 1816, 42.
Mergulus arcticus, Brehm, Vög. Deutschl. 1831, 994.
Alle nigricans, Link, Beschr. Nat.-Samml. Univ. Rostock, I. 1806, 17. — Coues, Bull. Nutt. Orn. Club, IV. 1879, 244; 2d Check List, 1882, no. 863. — Ridgw. Nom. N. Am. B. 1881, no. 752.

Hab. Coasts and islands of the North Atlantic, south in America to New Jersey in winter; breeds far northward.

Sp. Char. *Adult, in summer:* Head, neck, and jugulum uniform fuliginous-brown, growing gradually darker on the pileum and nape; remaining upper parts fuliginous-black, the secondaries tipped with white, and posterior scapulars edged with the same. Lower parts, from the jugulum back, immaculate white, the upper flank-feathers striped with dusky. Bill black; iris dark brown; "feet pale flesh-colored, webs dusky, claws black; inside of mouth light yellow" (Audubon). *Winter plumage:* Chin, throat, jugulum, malar region, and sides of the upper part of the nape white, the latter mottled with grayish, and the jugular feathers with dusky bases; otherwise like the summer plumage. "*Young, first winter:* Recognizable by its smaller and weaker bill, by the duller and more brownish black of the upper parts, almost wanting in gloss, and by the greater extension of the white upon the sides of the hind head and neck. The scapulars and coverts are conspicuously marked with white, as in the adult. The feet are mostly dusky" (Coues). *Downy young:* Uniform dark grayish fuliginous, somewhat paler beneath; bill black; legs and feet brownish (in dried skins).



Winter plumage.

Total length, about 8.50 inches; wing, 4.50–4.75; culmen, .50; tarsus, .80; middle toe, with claw, 1.20.

The Little Auk is the most decidedly oceanic, and also one of the most Arctic, of the family of *Alcidæ*. It lives and spends most of its time on the open sea, and very rarely resorts to the land — never doing so voluntarily, except during the breeding-season. It breeds exclusively in high northern regions — chiefly on islands — and always in places near the ocean.

It is found in the Arctic regions of America and Europe, and the islands in the Arctic Ocean, and in the northwestern portions of Asia, on the islands of Nova Zembla and Spitzbergen. In the last-named place Messrs. Evans and Sturge met with these birds in immense flocks. In one locality a great number of them were seen by these naturalists flying in and out of the cliffs; and one of the party was let down into close proximity with the nests by means of a wire rope. But it was found that this bird builds in such deep and narrow crevices that it was only after much hard labor, and by breaking the rock with a hammer, that the hand could be inserted so that the nests could be reached; and even then only three eggs were procured. Professor Newton also found this species numerous almost beyond belief on the greater part of the coast of Spitzbergen. Parry's Expedition met with it as far to the north as that party travelled. On their return, in August, they found it in great numbers between latitudes 82° and 81°. It was not met with in the Stor Fjord. Its breeding-places, though at a less height than those of its kindred, are very far from being easily accessible.

Mr. Gillett found this species numerous in Nova Zembla, especially in the northern portion. Its wild and peculiar cry is said to have a very startling effect in the calm light nights of the Arctic summer, especially when heard at the same time with the hoarse bellowing of the walruses. Von Heuglin found this Auk abundant wherever he went in the northern regions; and he speaks of it as more abundant farther north than it is in the more southern regions. In the Kara Sea all the birds of this species that he noticed were seen on floating ice.

Dr. Walker, in his "Ornithological Notes of the Voyage of the Fox," mentions that in passing up Baffin's Bay, and again in Melville Bay, he encountered myriads of birds of this species. In the summer of 1858, when in the last-named locality, great numbers were shot. They were found breeding near Cape York, and a number of their eggs were procured. In that locality they were found in vast numbers flying in and out of the stones, which formed a talus along the cliffs of primary rock. The bird lays a single egg in the hollows between the stones, where foxes and Gulls cannot reach them.

According to Professor Reinhardt, this Auk is a common resident species in Greenland.

It is occasionally found wandering along the coast of Europe and Africa to Spain, Madeira, and to the Azores. A single example was found by Mr. Godwin in a private collection of native birds at Terceira, in the Azores; it had been killed on the island several years previous to his visit. Mr. Layard, in his voyage in 1867 from England to Cape Town, when off Finisterre, on the coast of France, in November, met with a large number of these birds. They appeared to be chiefly in pairs. Mr. Godman also includes this species in his List of the Migratory Birds of Madeira and the Canaries. It is more numerous among the eastern islands of the latter group, although found occasionally among the others. It is also of occasional occurrence in Bermuda, where one was taken alive, Jan. 28, 1850, four or five having been driven on to a piece of grass-land near the house of Rev. J. N. Campbell.

This Auk is common during the winter off the New England coast, and was especially abundant during the winter of 1871–1872. In a long and violent northeast storm which prevailed on the coast in the latter part of November, 1871, thousands of these birds were driven upon the shore, and large numbers of them perished. They were utterly powerless to resist the wind and waves, and were forced into creeks, inlets, bays, harbors, and upon open beaches. Many were driven into the harbor of Boston, and, at high tide, forced upon the wharves and under the bridges, where hundreds were ruthlessly knocked on the head. This occurred also along the entire extent of coast; and some were even carried far inland, and were picked up near Middletown, Conn., and other interior towns, a hundred miles or more from the ocean. The birds, when found alive, appeared to be utterly exhausted, and a large number were already dead.

According to Giraud, this species is occasionally seen by the fishermen of Egg Harbor, N. J., when hauling their nets outside of the beach. It is an excellent diver, can fly well, subsists on small fish, and, not being timid, is easily secured.

According to Professor Newton, it occurs in Iceland all the year round. It is only known to breed on Grimsey, where Faber found it in 1820, and Proctor in 1837.

According to Yarrell, the "Rotches," as these birds are there called, are only winter visitors to the British Islands, where they seldom make their appearance on the coasts except during, or after, very stormy weather, when they are forced by violent and long-continuing winds to leave the rough sea and take shelter in land-locked bays. In the same manner they are sometimes driven upon the coasts of France and Holland.

Captain James C. Ross obtained a specimen of this Auk as far north as latitude 81°; and its only food appeared to be small thin-skinned crustaceans. Colonel Sabine found it abundant in Baffin's Bay and Davis Straits; and in latitude 76° it was so numerous in the channels of water separating fields of ice, that many hundreds were killed daily, and the ship's company supplied with them. All these birds in the breeding-season had the under part of the neck sooty black, terminating abruptly and in an even line against the white of the belly. The young ones, in all stages from the egg, as soon as they were feathered, were marked exactly like the mature birds; but in the third week in September every specimen, old or young, was observed to be undergoing a change, and in the course of a few days the feathers of the throat and cheeks and the under part of the neck had become white.

Mr. Kumlien found this Auk common on the north coast of Labrador, off Resolution Island, Grinnell Bay, and Frobisher's Straits, but did not meet with any in Cumberland. It was abundant off Exeter Sound and to the northward, on the west coast of Baffin's Bay, nesting as far north as latitude 78°, and perhaps farther. It was very abundant on the pack ice in Davis Straits during July, and was so unsuspicious that it could be caught from the schooner's deck with a net on the end of a pole.

Eggs of this species from Greenland in the Smithsonian collection are of a rounded shape — one end being less rounded than the other — and of a pale glaucous-white color, without spots. Three eggs measure 1.80 inches by 1.30; 1.85 by 1.25; and 1.90 by 1.25.

GENUS **PLAUTUS**, BRÜNNICH.

Alca, LINN. S. N. ed. 10, I. 1758, 130; ed. 12, I. 1766, 210 (part).
Plautus, BRÜNN. Zool. Fund. 1772, 78 (type, *Alca impennis*, LINN.). — BRANDT, Bull. Ac. St. Petersb. VII. 1869, 203.
Pinguinus, BONNAT. Enc. Méth. 1790, 28 (same type; not of BRÜNN. 1772).
Torda, DUMÉRIL, Zool. Anal. 1806, 72 (same type).
Chenalopex, VIEILL. Nouv. Dict. XXIV. 1818, 132 (same type).
Matæoptera, GLOGER, Handb. 1842, (same type).
Gyralca, STEENSTRUP, Vid. Med. Nat. For. Kjöb. 1855, 114 (same type).

CHAR. Largest of the family. Form heavy and robust, the wings disproportionately small, not admitting of flight; tail short, pointed; bill about as long as the head, much compressed, its greatest depth equal to about half the culmen; culmen straight, and parallel with the commissure for the basal half, then regularly curved to the gently declinate tip; terminal half of the maxilla with about six to ten obliquely transverse faintly curved grooves; terminal half of the mandible with about the same number of vertical grooves; lores completely and densely feathered, the nostrils hidden beneath the lower edge of the feathered area; legs short and stout, the tarsi compressed and transversely scutellate anteriorly; web of the feet full and broad.

Only a single species of this genus is known, and this is supposed to be now entirely extinct, although a considerable number of examples are preserved in museums.

Plautus impennis.

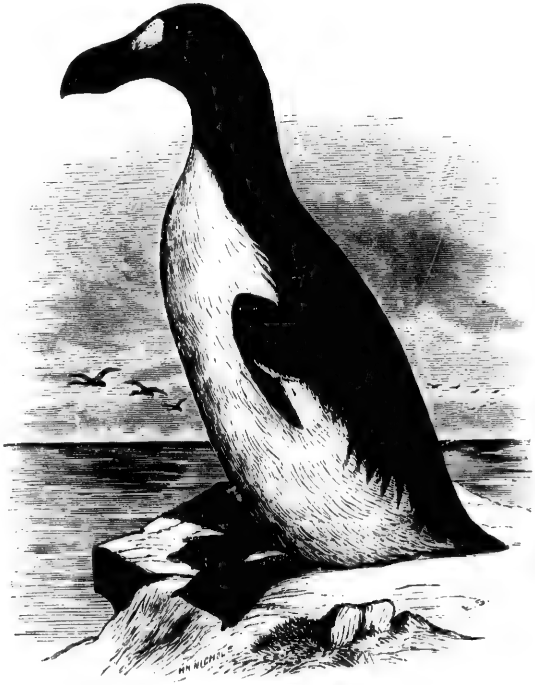
THE GREAT AUK.

Alca impennis, Linn. S. N. ed. 10, 1758, 130, no. 2; ed. 12, I. 1766, 210, no. 2. — Aud. Orn. Biog. IV. 1838, 316; B. Am. pl. 341; oct. ed. VII. pl. 465. — Cass. in Baird's B. N. Am. 1858, 900. — Baird, Cat. N. Am. B. 1859, no. 710. — Coues, Pr. Ac. Nat. Sci. Philad. 1868, 14; Key, 1872, 339; Check List, 1873, no. 615; ed. 2, 1882, no. 878. — Ridgw. Nom. N. Am. B. 1881, no. 741.

Plautus impennis, Steenstr. Vid. Med. Nat. For. Kjöb. 1855, 114.

Alca borealis, Forst. Synop. Cat. Brit. B. 1817, 29.

Hab. Believed to be now extinct. Formerly (previous to 1844) inhabited the islands of the North Atlantic, south to the coast of New England (Nahant and islands in Boston Bay); probably did not occur north of the Arctic circle (Wolley).

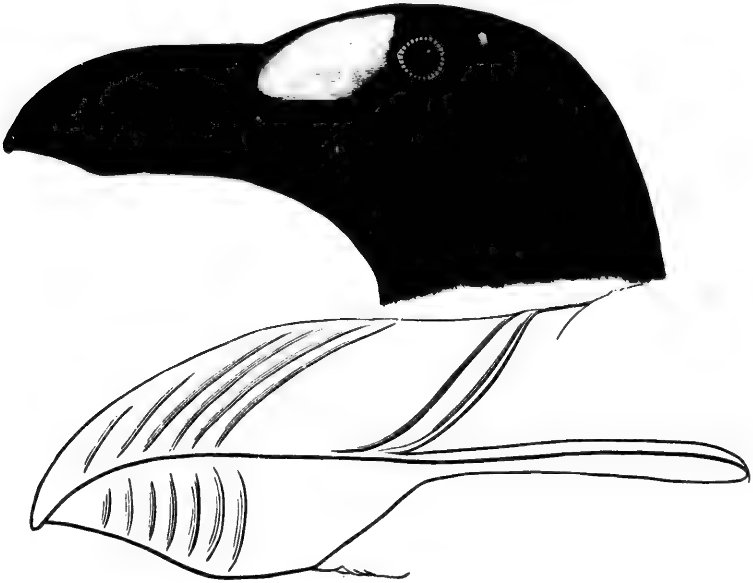


P. impennis, summer adult.

Sp. Char. *Adult, in summer:* Head, neck, and upper parts, blackish, the throat and sides of the head and neck inclining to a clear snuff-brown shade; lower parts, a large oval space covering the greater part of the loral region, and the tips of the secondaries, white; the white of the jugulum extending upward in a point into the snuff-brown of the middle portion of the throat. "Bill black, with the grooves between the transverse ridges white; iris hazel; feet and claws black" (Audubon).

Total length, about 29.00 to 30.00 inches; extent, 27.25 (AUDUBON); wings, 5.75; tail, about 3.00; bill along gape, 4.25–4.50; culmen, 3.15–3.50; greatest depth of closed bill, about 1.50; tarsus, 1.66; middle toe with claw, 3.25.

We have seen no description of this species in young or winter plumage; the latter, however, judging from the seasonal changes in *Alca torda* and other members of the family, would doubtless have the under side of the head white, the maxilla destitute of the basal lamina, and perhaps the loral white patch absent.



The researches of the late Mr. John Wolley into the history of this probably extinct species, as presented by Professor Alfred Newton ("Ibis," 1861, pp. 374–399), have thrown much light upon their closing existence in Iceland, and have preserved the records of many interesting facts that would otherwise have passed into oblivion. This author calls attention to the very general misconception that has prevailed, to the effect that the Great Auk was a bird of the Far North, and belonged to Polar Regions. This error — as he supposes — originated in the inadvertence of naturalists, who have confounded localities quite distinct and remote from one another. There is hardly a single reliable instance on record of the capture of the Great Auk within the limits of the Arctic circle. Even the statement, quoted by Reinhardt, that this bird has been taken on Disco Island ("Ibis," 1861, p. 15) is not free from doubt, and possibly it may have been confounded with the specimen obtained at Fiskernaes in 1815; and Professor Newton is evidently inclined to the belief that there is no trustworthy evidence that this bird ever existed within the Arctic circle.

Mr. Wolley could find no traces of the recent presence of the Great Auk about Iceland, except among a small chain of volcanic islets, known as the Fuglasker, lying off the southwestern point of that island. These islets are from thirteen to thirty miles distant from the shore, widely separated from each other, and, owing to currents and the tempestuous character of the locality, of dangerous approach. The outer island of all, and the one on which these birds are supposed to have chiefly abounded, was formerly one of the most considerable of the chain; but in 1830, after a series of submarine disturbances, it entirely disappeared. Other rocky islets exist in this chain more distant from the shore. Professor Newton found in the public library of Reykjavik a manuscript account of this outer island — the former habitation of this Auk — in which, in one of the accompanying notes, a very accurate description is given of the bird itself and of its peculiarities, as also of its egg. This manuscript is supposed to have been written somewhere about the year 1760. Three authors are cited, who refer to the former abundance of this bird on these islets, one of them stating that the people had often filled their boats with the eggs. There was also abundant evidence derived from parties still living as to the existence of these birds during the present century. In 1807, during the hostilities between England and Denmark, a privateer that had plundered the Faröes and Reykjavik visited these islands and made the most wholesale slaughter of the Auks. Again in 1810, the inhabitants of the Faröes, being reduced almost to starvation by the war, made an excursion to Iceland, on which occasion these islands were again invaded, and this bird subjected to a murderous attack. It is probable that these two wholesale massacres so very nearly exterminated the Auks that they never recovered from their effects. Faber mentions that seven of these birds were killed in 1814 on a more northern islet. In 1821 the same writer visited their usual breeding-place, but met with none of them; and it was supposed that they all had been destroyed by a party of French sailors who had recently visited the islands. The birds had not then, however, been quite exterminated, as that very season others were seen and killed, proof of these statements having been obtained by Professor Newton. There was also reliable evidence of the capture of an example of this Auk in 1828.

In 1830, the year in which the main islet disappeared beneath the waves, an inhabitant of Kyrkjuvogr visited the high rock which stands between the sunken island and the cape, and in two excursions obtained about twenty specimens of this bird; and in the following year as many as twenty-four of them were taken, one of which was brought off alive. Again in 1833, and also in 1834, more of these birds were captured on the same rocky islet, as well as several eggs, most of which were sold to a dealer in Hamburg. A few more were afterward taken in 1840 or in 1841. The last of these birds known to have been procured in Iceland were two killed in 1844. A drawing of one of these was made by a French artist, which in 1860 was hanging in the shop of an apothecary in Reykjavik.

These last specimens of the Auk were taken by a party of fourteen men in an excursion to one of these rocky islets, now known as Eldey. This island is a precipitous stack, perpendicular nearly everywhere, and seventy fathoms in height at its loftiest point, but with a gradual slope on one side from the sea to a considerable elevation. Here is the only landing-place, and farther up is the spot where the birds made their home. Two Auks were seen among the numberless other rock-fowl, and were at once pursued. They did not show the slightest disposition to repel the invaders, but immediately ran along under the high cliff, with their heads erect and their little wings extended. They uttered no cry of alarm, but moved with short steps about as fast as the usual gait of a man. One bird was driven into a corner, and there captured; the other secured just on the edge of the precipice, over the water. Both were strangled; and their bodies are now in the Museum of the University of Copenhagen. One egg was found, but it was broken.

Professor Newton was informed that within the recollection of many persons now living, the "Gare-fowls" — as they were called in Iceland — were so constantly observed in the sea by the fishermen that their appearance hardly attracted any attention. They were said to swim with their heads much lifted up and their necks drawn in. They never made any attempt to flap along the water, but dived as soon as they were alarmed. On the rocks they sat more upright than do either the Guillemots or Razor-bills, and their stations were usually farther removed from the sea than are those of these birds. They were easily frightened by loud noises, but not by anything seen, and they would sometimes utter a few low croaks. They were not known ever to attempt to make any defence of their eggs or young, but when caught would bite fiercely. They walked or ran with short steps, and went straight on, in the manner of a man. They have been known to drop from a rock into the water some two fathoms below.

To this account of the Great Auk Professor Newton adds the information — received from Sir William Milner — of the possession by the latter of a fine specimen of this bird that had been killed in the Hebrides. It has been stated by Professor Reinhardt — although this is not fully credited by Professor Newton — that some time before the extinction of this species, and when it was still numerous at its breeding-places, it appears to have visited Greenland, but only during the winter months. The birds were all in immature plumage, and appeared only in limited numbers. He adds that at some time during the present century — probably about 1821 — a specimen is known to have been killed on Disco Island, and one other is supposed to have been captured some years earlier. But none of the other instances in which this bird is said to have been captured in Greenland are credited by Professor Reinhardt.

In the "Ibis" of January, 1865, mention is made of the fact that among a set of bird bones from a place of ancient interment on the coast of Caithness, some remains of this species were identified by Professor Owen. Mr. J. M. Jones, of Halifax, presented to the British Museum an almost perfect skeleton of this bird, which had been found on Funk Island, off the northeast coast of Newfoundland. In connection with this interesting discovery, Mr. George A. Boardman, of Milltown, N. B., informs me that he was told by Rev. Mr. Wilson that this species, to his certain knowledge, was still in existence about Newfoundland between 1814 and 1818.

Audubon was told that the "Gare-fowl" was once plentiful about Nahant and islands in Massachusetts Bay; and although Professor Orton doubts the truth of the statement made by the old hunters of Chelsea, it is probably true. The Auk was not an Arctic bird, as Professor Orton states — certainly not exclusively so; and the frequency with which fragments of its bones have been found in the shell-heaps along the coast of Massachusetts is strong confirmatory evidence of the probable truth of the statement given above. Bones of this species have been taken from shell-heaps in Marblehead, from Eagle Hill, Ipswich, and from Plum Island, Newburyport.

Mr. J. E. Cabot was informed by an old fisherman living in Ipswich that a bird which must have been one of this species was captured by his father in that place many years ago; Mr. Cabot has no doubt that the bird then taken was the Great Auk. Professor Wyman discovered the remains of this bird at Mount Desert; and Professor Baird obtained a humerus of this species in a shell-heap in Ipswich in August, 1868.

Audubon also states that Mr. Henry Havell, when on his passage from New York to England, hooked a Great Auk, on the Banks of Newfoundland, in extremely boisterous weather. This bird was left at liberty on deck, where it walked very awkwardly, often tumbling over, biting every one that came within reach of its powerful bill, and entirely refusing food. When in Labrador, Audubon was informed that this Auk was then living on rocky islands off the southeastern end of Newfoundland; but he was not able to obtain further confirmatory evidence on this point. But as a few of these birds are known to have been alive at the time this statement was made, it may have been true, as we have no data as to the exact time of the disappearance of this bird from American waters.

This Auk is said to have been an unrivalled swimmer and diver. One that was pursued by Mr. Bullock, among the Orkney Islands, north of Scotland, near Papa Westra, distanced a six-oared boat. Buffon mentions, in regard to this bird, that it was rarely if ever seen out of soundings, and that its presence was regarded as an infallible indication of the near presence of land.

Dr. Fleming refers to a bird of this species as having been obtained at St. Kilda — one of the Outer Hebrides — in the winter of 1822; another was taken alive there in 1829, but managed to escape from its captors. Mr. Macgillivray visited these islands in 1840, and was informed by the inhabitants that the Great Auk was of not infrequent occurrence about St. Kilda; but that it had not been known to breed there for many years back. A specimen of this bird was picked up dead near Lundy Island, off the coast of Devonshire, in 1829. In 1834 one was taken off the coast of Waterford, Ireland, and is now in the collection of Trinity College, Dublin. This is the last specimen known to have been obtained in British waters; that referred to by Mr. Edwards having been captured at sea, over a fishing-bank, about three hundred miles from Newfoundland.

There is more or less disagreement in regard to some of the habits of this bird. Yarrell states that it was rarely seen out of water; but if this had been true, how it came to be exterminated would be hard to explain. That "the female lays her single large egg close above sea-tide mark" is not confirmed by information obtained by Professor Newton, according to which this bird appeared to have nested farther from the water than do most of its class of divers. Most writers agree that it laid but a single egg, and that when attacked it made no resistance, unless taken in the hand; but Yarrell states that in 1829 a pair — male and female — were killed on the Geirfugle-Skjœr whilst courageously defending their two eggs.

In a work descriptive of "Newfoundland and its Missionaries," printed in Halifax by Dakin & Metcalf, and published by the Wesleyan Book-room in 1866, the following reference is made to the Great Auk: "Half a century ago the Penguin was very plenty. It is a handsome bird, about the size of a Goose, with a coal-black head and back, a white belly, and a milk-white spot under the right eye. They cannot fly well, their wings are more like fins. They have on their bodies short feathers and down. The Penguin is now but seldom seen; such destruction of the bird was made for the sake of its feathers, that it is now all but extinct" (p. 64).

Mr. George A. Boardman having seen the above paragraph, and meeting its author, questioned him more particularly about the Penguin, and obtained a few further details. At the time of his residence in Newfoundland he was a Methodist missionary stationed on the coast, not far from the Funk or Fogo Island, between the years 1818 and 1823. He saw the Penguins during the whole of his stay in the island in considerable number, and frequently lectured the inhabitants for their cruelty in destroying them merely for their feathers. It was quite common for the boys to keep them tied by the leg as pets.

In a work on "New England Rarities," by John Josselyn, Gent., London, 1672, occurs the following reference to the Auk: "The Wobble is an ill shaped Fowl, having no long Feathers in their Pinions, which is the reason they cannot fly, not much unlike the *Pengwin;* they are in the Spring very fat, or rather oyly, but pull'd and garbidg'd, and laid to the Fire to roast, they yield not one drop." This author lived eight years in Scarborough, a hundred leagues east of Boston. This renders it highly probable that the Auk was then common in Casco Bay, where its bones are now found in shell-heaps.

In *Il Gazettiere Americano,* published in Leghorn, in 1763 (Vol. III. p. 158), under the head of Newfoundland, is the following paragraph: "The bird which is represented in the annexed plate [a very good figure of *P. impennis*] is found more frequently here than elsewhere. Although commonly called the Penguin of the north, it is quite different from the true Penguin of the south, with which by some it is wrongly confounded. In size it is equal to the common domestic Goose; and the better to judge of this in the plate the head and bill are given the size of life."

In "A Discovrse and Discovery of Nevv-fovnd-land," etc., by Captain Richard Whitbourne, of Exmouth, in the county of Devon, imprinted at London by Felix Kingston, 1622 (p. 9), is the following: "These Penguins are as bigge as Geese, and flye not, for they haue but a little short wing; and they multiplie so infinitely, vpon a certain flat Iland, that men driue them from thence vpon a boord, into their boats by hundreds at a time; as if God had made the innocency of so poore a creature, to become such an admirable instrument for the sustentation of man."

In a description of Greenland by Hans Egede, translated and published at London (2d ed.), 1818 [author's date, Copenhagen, July 20, 1718], we find: "There is another sea-bird, which the Norway-men call Alkes, which in the winter season contributes much to the maintenance of the Greenlanders. Sometimes there are such numbers of them that they drive them in large flocks to the shore, where they catch them with their hands" (pp. 95–98).

In "New Voyages to North America," from 1683 to 1694, by the Baron Lahontan, Lord Lieutenant, etc., translated from the French, London, 1735 (Vol. I. p. 241), occurs the following: "The *Moyacks* are a sort of Fowl, as big as a Goose, having a short Neck and a broad Foot; and which is very strange, their Eggs are half as big again as a Swan's, and yet they are all Yelk, and that so thick, that they must be diluted with Water before they can be us'd as Pancakes."

GENUS **ALCA**, LINNÆUS.

Alca, LINN. S. N. ed. 10, I. 1758, 130; ed. 12, I. 1766, 210 (type, *A. torda*, LINN.).
Utamania, LEACH, Syst. Cat. Brit. Mus. 1816 (same type).

CHAR. Similar to *Plautus*, but smaller, the wings well developed, so as to admit of long-sustained flight; bill much shorter than the head, the culmen much arched from the base, the maxilla with only three to five sulci, the mandible with but two or three, and these indistinct.

There is but one species of this genus, the well-known Razor-bill Auk (*A. torda*), common to both sides of the North Atlantic.

Alca torda.

THE RAZOR-BILLED AUK.

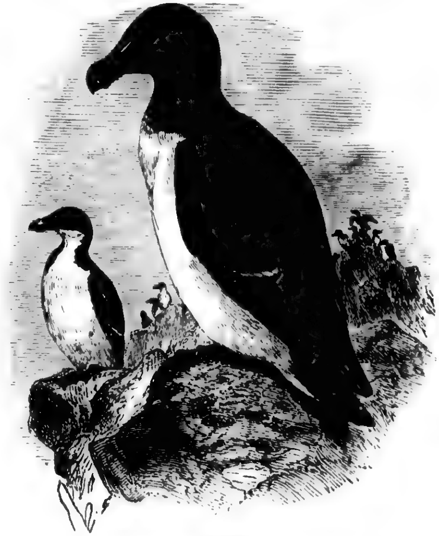
Alca torda, LINN. S. N. I. 1758, 130 (adult); ed. 12, I. 1766, 210. — AUD. Orn. Biog. III. 1835, 112; V. 1839, 428, pl. 214. — CASS. in Baird's B. N. Am. 1858, 901. — BAIRD, Cat. N. Am. B. 1859, no. 711. — COUES, Check List, 1873, no. 616.

Utamania torda, LEACH, Stephens's Gen. Zool. XIII. 1825, 27. — COUES, Pr. Ac. Nat. Sci. Philad. 1868, 18; Key, 1872, 340; 2d Check List, 1882, no. 877. — RIDGW. Nom. N. Am. B. 1881, no. 742.

Alca pica, LINN. S. N. I. 1766, 210 (young, or winter plumage).

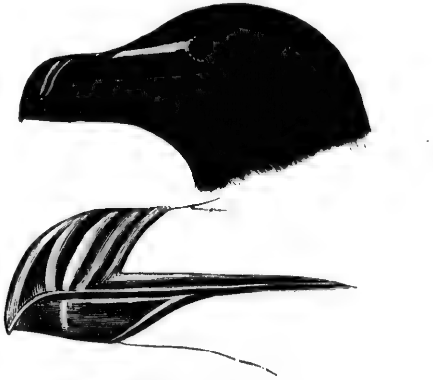
Alca balthica, Brünn. Orn. Bor. 1764, 25, no. 101 (immature, without white line from bill to eye).
Alca unisulcata, Brünn. t. c. no. 102 (young).
Alca glacialis, Brehm, Vög. Deutschl. 1831, 1004.
Alca islandica, Brehm, t. c. 1005.
Alca microrhynchus, Brehm, Vogelf. 1855, 410.

Hab. Coasts and islands of the North Atlantic, down to about latitude 40° in winter. Japan? (*fide* Schlegel).



A. torda.

Sp. Char. *Adult, in summer:* Head, neck, and upper parts black, the head and neck more fuliginous, and changing to soft, velvety snuff-brown on the under portion of the head and foreneck; secondaries narrowly tipped with white; a narrow white line running from the base of the culmen to the eye. Lower parts, including jugulum, axillars, and lining of the wing, immaculate white. Bill black, both mandibles crossed about the middle by a white line; "inside of mouth gamboge-yellow; iris deep hazel; feet black" (Audubon). *Adult, in winter:* Whole under portion of the head, foreneck, and post-auricular region white; no white line from eye to bill; bill without basal lamina. Otherwise like the summer plumage. *Young:* Similar to the winter plumage, but bill smaller, perfectly smooth, and without the white bar across the middle portion.



Summer adult.

Total length, about 17.00 inches; wing, 8.00 to 8.50; tail, 3.50; culmen, 1.25; greatest depth of bill, .90; tarsus, 1.25; middle toe, 1.55.

This is a northern and Arctic species, abundant throughout the eastern shores of North America from the highest latitudes to Maine in summer and to New Jersey in winter. It is found on the western coast of Europe in the winter as far south as the Mediterranean. It is present on the Arctic coast of Asia; but so far as I am aware has never been taken on the Pacific shores of Asia or America, with the exception of the single Japanese record of Schlegel.

According to Professor Reinhardt, the Razor-bill is a resident of Greenland. It is also given by Middendorff as being found in the extreme northern portions of Siberia. It was met with on the coast of Spain, as well as on the shores of the Mediterranean, by Mr. Saunders, but it was very rare. This is still a not uncommon species at Grand Menan and on other rocky islands in the Bay of Fundy. During the winter it wanders down along the Atlantic sea-coast as far as Long Island, where, according to Giraud, it has been occasionally observed, but is not common. During the winter months an occasional bird of this species is exposed for sale in the Boston and New York markets, but it is nearly valueless for food.

The Razor-bill is an oceanic bird, having in many of its habits considerable resemblance to the Divers. It swims and dives with wonderful ease, and feeds upon small fish and crustaceans. In most respects, also, its habits are identical with those of the Guillemots and Mormons. Except during the breeding-season, when congregating in immense numbers on its breeding-grounds, it is generally seen singly. It is said to venture out farther from the shore, and to be able to dive in deeper water to collect its food, than can any of its family.

Audubon, in his voyage to Labrador, saw the Razor-bill constantly, and observed it fishing on banks where the water was eighteen fathoms deep. From the length of time the bird remained under water he had no doubt that it dived to the bottom and fed there. He was told that these birds arrive at the Madeleine Islands — where many of them breed — about the middle of April, while the Gulf of St. Lawrence is still covered with ice. On his way to Labrador he noticed these birds every now and then passing in long files, and flying, at the height of a few yards above the water, in an undulating manner and with regular beat of the wing. They often flew within musket-shot of the vessel.

He afterwards found this bird breeding in immense numbers on a small rocky island in the harbor of Wapatiguan, in deep and narrow fissures of the rocks. In order to reach both the birds and their eggs, long poles, with hooks at their extremities, were made use of. In a small horizontal cavern about two feet in height, where many were nesting, he found their eggs scattered at the distance of a few inches from each other; and where they were in fissures of the rock, they lay close together, small pebbles and broken stones being heaped up to the height of several inches so as to allow the water to flow off beneath them. In such localities this Auk sits flat upon its egg, in the manner of a Duck. When the single egg is deposited on an exposed rock, each bird stands almost upright upon it. Audubon also states that in several instances, where the parent bird was in a sheltered situation, he found her sitting on two eggs. It is, however, probable that in such cases the eggs were the product of different birds nesting near each other. He also states that these birds begin early in May to deposit their eggs; but as their period of incubation is four weeks, and as it was not until July that he found any young birds, all of which were yet small, it is probable he named too early a period for the beginning of the time of incubation. The young have tender unformed bills, are covered with down, and have a lisping note. Their parents supplied them plentifully with shrimps and small bits of fish. They were on good terms one with the other, and did not quarrel, as do the Puffins. When a finger was placed within their reach, they seized hold of it with their bills, showing thus early their desire to bite, so characteristic of their parents when these are taken in the hand. The old birds, when wounded, throw themselves on their backs, in the manner of Hawks, and fight desperately with their bills and claws. They walk on the rocks with considerable celerity and apparent ease; when intruded upon, they take to wing as soon as possible, and fly around the spot several times before they will again descend; or alight on the water and await the departure of the intruder before they venture to return.

Most writers speak of the Razor-bill as having but a single egg at a time; but Audubon thinks it occasionally lays two. The eggs are said to average 3.12 inches in length by 2.13 in breadth. They are generally of a pure white color, much blotched with dark reddish brown or blackish spots, which are usually confluent about the larger end. The yolk is orange-yellow, and the white tinged with a pale blue. Owing to the difficulty of procuring these eggs — most of them being secreted in deep crevices — these birds are rarely disturbed by the eggers, who plunder the Guillemots much more successfully.

This species feeds on the roe of fish, on shrimps, on various small marine animals, and on the smaller fishes. Its flesh is dark, and not prepossessing in appearance; but it is considered good by the fishermen, and according to Audubon was found tolerable when cooked in a stew. The bird is said to be two years in acquiring its full size and the mature form of its bill. When full grown its weight is about a pound and a half. After breeding the birds moult, and are then unable to fly before the beginning of October, when they move southward or into the open sea.

According to Yarrell, this bird has occasionally appeared on the shores of Italy and Sicily; and the London Zoological Society has received an immature specimen from Tangier.

Dr. Henry Bryant found it breeding on the northern shores of the Gulf of St. Lawrence. Though abundant, it was less numerous than the Foolish Guillemot, but much more generally distributed, breeding in greater or less numbers on almost all the rocky islands, even on those at some distance from the open waters of the Gulf; this the *Uria* never does.

Generally its eggs can be easily distinguished from those of the Guillemot; but it occasionally happens that an egg of the latter is so much like that of the Razor-bill that a mistake may be made. Dr. Bryant doubts the correctness of Naumann's statement that the egg of this species may be distinguished by the spots being always shaded on their edges with reddish brown, as he has found eggs of the Guillemot similarly shaded. In regard to the number of the eggs of the Razor-bill, Dr. Bryant states that though he has found hundreds of them, he never knew more than one to be laid by the same bird, and in no instance did he ever find anything like a nest. Four eggs selected by Dr. Bryant as average representatives of size and shape varied from 2.80 to 3.29 inches in length, and from 1.71 to 1.93 in breadth. The following are the measurements of each: 2.80 by 1.71 inches; 2.97 by 1.93; 3.29 by 1.87; 3.17 by 1.93. About 3.00 inches appears to be their average length, and about 2.00 the average breadth.

Dr. Coues, who visited Labrador in 1860, sent me, on his return, September 20, some interesting notes in regard to this species. He found it breeding at the first place at which he landed — Sloop Harbor — and procured its eggs at Eskimo Bay, the farthest point north visited. They were called "Backalaw birds," from their having formerly bred on the island of that name; but are more commonly known as "Trikers." They do not form such large colonies as the Murres and Puffins, but breed in greater or less numbers wherever there is a suitable island — often together with other birds. At Puffin Island they were in great abundance, laying in deserted

Puffins' holes and crevices of the rocks. When he passed the Murre Rocks, a large proportion of the myriads of birds flying around the ship were Auks, easily distinguished, even at a long distance, by their bill. As the two species thus breed indiscriminately together, many of the eggs coming from the rocks where the Murre nests are in reality those of the Auk. There is no difficulty, however, in distinguishing them from each other. The egg of the Auk never has a green or a blue ground-color, but is always white, spotted and blotched with dark umber, and seldom or never streaked. It is also more elliptical, much less pointed, and somewhat smaller. The Razor-bill lays by preference in the cracks and crevices of rocks, but also in company with the Murres on the bare rock, and with the Puffins in their deserted holes. He found young, that had been hatched out but a short time, on the 26th of July. On being wounded, or taken in the hand alive, this bird utters a loud hoarse cry, and fights and scratches most furiously, biting with great force, its strong hooked bill enabling it to inflict a severe wound. Dr. Coues found the flesh of this bird well flavored, and not possessing the slightest rank or fishy taste when thoroughly stewed. He never noticed more than a single egg. The eggs, though differing in their markings, are comparatively uniform in their size and shape, about 3.00 inches in length by a little less than 2.00 in breadth; the ground-color is either pure white or with a creamy tinge, and the spots are of different shades of umber-brown.

Eggs of this species have a ground-color varying from a dull buffy white to a pale greenish buff, or a buffy white with a greenish tinge. They are usually boldly marked with large blotches of blackish brown, burnt-umber, and lavender-gray. They do not usually vary much in their general appearance or size, and their shape is almost always exactly oval. Typical eggs in my collection from Labrador measure: 2.92 by 1.80 inches; 3.00 by 1.90; 2.85 by 1.92.

GENUS **URIA**, BRISSON.

Uria, BRISS. Orn. VI. 1760, 70 (part).
Lomvia, BRANDT, Bull. Ac. St. Petersb. II. 1837, 345 (type, *Colymbus troile*, LINN.).
Cataractes, GRAY, List Gen. and Subgen. 1841, 98 (same type).

CHAR. Much larger than *Cepphus*. Bill much longer than the tarsus, much compressed, the gonys concave, and nearly as long as the culmen; maxilla notched near the tip, its tomia much inflected; nasal fossæ completely and densely feathered; a distinct longitudinal furrow in the feathering behind the eyes; plumage white beneath at all seasons.

Key to the Species.

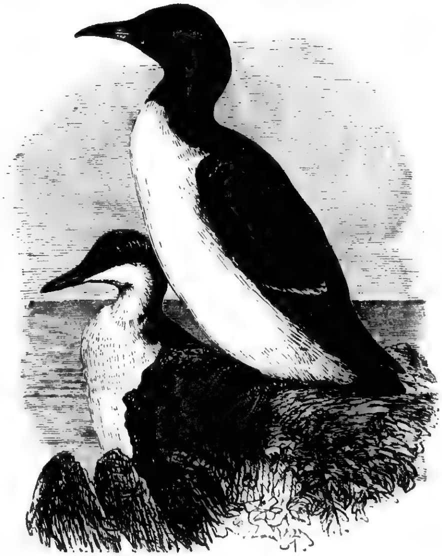
1. **U. troile.** Depth of bill through angle less than one third the length of the culmen; head and neck uniform smoky brown, scarcely, never conspicuously, darker on pileum and nape.
   - *a*. *Troile.* Wing, 7.75–8.30 inches (average, 7.99); culmen, 1.70–1.90 (1.81); gonys, 1.05–1.20 (1.14); depth of bill through angle, .50–.60 (.52); tarsus, 1.40–1.60 (1.51); middle toe, 1.60–1.75 (1.70). *Hab.* North Atlantic, south, in winter, to New England.
   - *β*. *Californica.* Wing, 7.85–8.80 inches (average, 8.30); culmen, 1.60–2.50 (1.86); gonys, 1.15–1.40 (1.27); depth of bill through base, .55–.62 (.57); tarsus, 1.35–1.60 (1.50); middle toe, 1.65–1.85 (1.74). *Hab.* Pacific coast of North America, south to California (breeding).
2. **U. lomvia.** Depth of bill through angle more than one third the length of the culmen; pileum and nape black, like the back, in more or less conspicuous contrast with the deep snuff-brown of other portions of the head and neck.

a. Lomvia. Wing, 7.45–8.80 inches (average, 8.24); culmen, 1.40–1.50 (1.45); gonys, .75–.90 (.83); depth of bill through angle, .52–.58 (.55); tarsus, 1.40–1.55 (1.45); middle toe, 1.65–1.75 (1.70). *Hab.* North Atlantic, south to New Jersey; Arctic Ocean.

β. Arra. Wing, 8.15–9.25 inches (average, 8.71); culmen, 1.45–1.75 (1.65); gonys, .85–1.00 (.92); depth of bill through angle, .55–.60 (.58); tarsus, 1.45–1.60 (1.51); middle toe, 1.70–1.90 (1.81). *Hab.* North Pacific.

Uria troile.

THE COMMON GUILLEMOT.



U. troile (summer and winter plumages).

Colymbus troile, LINN. Faun. Suec. ed. 1761, 52; S. N. I. 1766, 220.
Uria troile, LATH. Ind. Orn. II. 1790, 796, no. 1. — DE KAY, N. Y. Zool. II. 1844, Birds, 279.
Catarractes troille, BRYANT, Pr. Boston Soc. 1861, 6, fig. 2*a*.
Uria (Lomvia) troile, BRANDT, Bull. Ac. St. Petersb. II. 1837, 345.
Lomvia troile, COUES, Pr. Ac. Nat. Sci. Philad. 1868, 75; Key, 1872, 346; Check List, 1873, no. 634; ed. 2, 1882, no. 874. — RIDGW. Nom. N. Am. B. 1881, no. 763.
Uria lomvia, BRÜNN. Orn. Bor. 1764, 27, no. 108. — CASS. in Baird's B. N. Am. 1858, 913. — BAIRD, Cat. N. Am. B. 1859, no. 729.
Colymbus minor, GMEL. S. N. I. ii. 1788, 585 (part).
?[1] *Uria ringvia*, BRÜNN. Orn. Bor. 1764, p. 28, no. 111. — BAIRD, Cat. N. Am. B. 1858, no. 730.
? *Uria (Lomvia) ringvia*, BRANDT, Bull. Ac. St. Petersb. II. 1837, 345.
? *Lomvia ringvia*, COUES, Pr. Philad. Acad. 1868, 77.
Uria ringvia, CASS. in Birds N. Am. 1858, 914 (description and part of specimens enumerated).
? *Catarractes ringvia*, BRYANT, Pr. Boston Soc. 1861, 8.
Uria alga, BRÜNN. l. c. no. 112.

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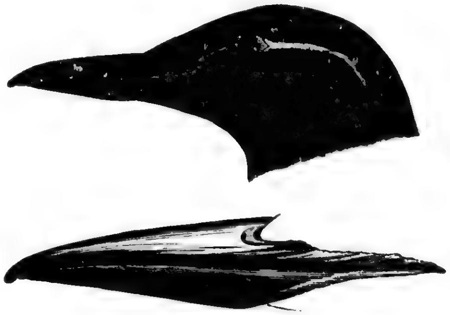
[1] The names preceded by an interrogation point refer to the form known as *Uria ringvia*.

"*Columbus langvia*, Olaff, Reise n. Isl. p. 562" (Bryant).[1]
Colymbus troile, var. *β*, Donndorff, Beytr. Zool. II. pt. i. 1794, 875.
Colymbus troile, var. *γ*, Donndorff, t. c. p. 876.
? *Uria lachrymans*, Valenc. in Choris, Voyages Pitt. autour du Monde, Aléout, 1822, 27, pl. 23.
? *Uria troile leucophthalmos*, Faber, Prodr. Isl. Orn. 1822, 42 ; Isis, 1824, 146.
? *Uria leucopsis*, Brehm, Beitr. Vogelk. III. 1823, p. 880 ; Isis, 1826, 888.

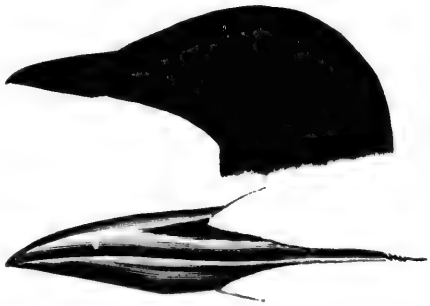
Hab. Coasts and islands of the North Atlantic, north to at least 80°, south, in America, to Southern New England in winter ; breeding from Nova Scotia northward.

Sp. Char. *Adult, summer plumage:* Head and neck, *including the pileum and nape*, uniform smoky brown, scarcely — never conspicuously — darker above ; in some specimens (= *U.* "*ringvia*"), the edge of the eyelids, forming a ring completely round the eye, and a narrow postocular line, white. Upper parts uniform dusky, sometimes nearly black, the secondaries narrowly tipped with white. Lower parts, including the jugulum, white, this color anteriorly forming more or less of an angle on the foreneck ; exterior feathers of the sides and flanks broadly edged on both webs with smoky gray or fuliginous-dusky. "Bill black ; inside of mouth gamboge-yellow ; feet black" (Audubon). *Winter plumage:* Similar to the above, but whole throat, cheeks, auricular region, and a broad stripe on each side of the occiput white, the latero-occipital stripe separated from the white below it, except posteriorly, by a narrow stripe of dark smoky brown along the upper edge of the auriculars. Stripes along the sides and flanks indistinct. Bill and feet dull brownish. *Young:* Similar to the winter plumage, but no white on the sides of the occiput, and that of the foreneck faintly mottled with dusky. *Downy young:* Head, neck, and upper parts smoky grayish brown, the head and neck finely streaked with dingy whitish ; lower parts dingy white centrally.


" U. ringvia," summer dress.

Total length, about 17.00 inches ; extent, 30.00 ; wing, 7.75–8.30 (average, 7.99) ; culmen, 1.70–1.90 (1.81) ; gonys, 1.05–1.20 (1.14) ; depth of bill through angle, .50–.60 ; tarsus, 1.40–1.60 (1.51) ; middle toe, 1.60–1.75 (1.70).[2]

With regard to the perplexing form with white eyelids and postocular streak, we must confess ourselves undecided. The theory that it is an individual variation of *troile* seems the only one which can be adopted, in view of the asserted fact that the feature in question is not seasonal or sexual, and that the two forms "are known to copulate with each other" (cf. Coues, Pr. Philad. Acad., 1868, 78). There may be some mistake, however, as to these supposed facts ; at any rate, were they true, it seems very strange that the same phase is never assumed by the western form of the species (*californica*).


U. troile, summer dress.

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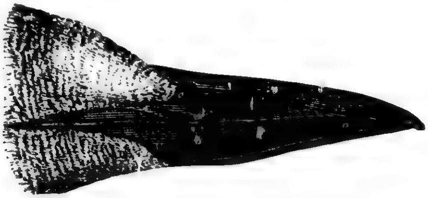
[1] By typographical error printed "Plaff." in original. The correct quotation is probably *Colymbus langvigia*, Olaffs. Reise, p. 562.

[2] Extremes and average of nine adults.

Uria troile.

The Foolish Guillemot may be taken as eminently typical of those diving-birds which are at once oceanic and Arctic. It occurs throughout the northern hemisphere, although rare in the North Pacific Ocean. On the American coast it breeds from the mouth of the Bay of Fundy — where it is comparatively rare — northward as far as the land extends. In midwinter it is found in the open sea as far south as the lower waters of the Chesapeake. It is very rarely met with in bays or land-locked inlets, unless driven there by severe storms and against its own will.



U. troile californica, summer adult.

In Europe it wanders in winter to the Mediterranean, and breeds from the British Islands northward. It is found throughout the Arctic Ocean, and breeds on nearly all the islands north of Asia, Europe, and America. It was found by Bischoff present, but not abundant, at Kadiak.

It is given by Professor Reinhardt as being one of the resident species of Greenland. In the summer of 1858 Dr. Walker, in the Expedition of the "Fox," encountered thousands of this species on the coast of Greenland, and afterward in Melville Bay.

According to Giraud, this bird is to be met with in winter off the coasts of Long Island and New Jersey. Professor Newton states that Dr. Malmgren found it breeding on Bear Island, Spitzbergen, in almost incredible numbers; and there he found intermingled with it occasional specimens of *Uria ringvia*, which he regards rather as a variety of this bird than as entitled to specific rank.

Middendorff met with this species on the Siberian coast, on the margins of the tundras of that desolate region.

Mr. Howard Saunders states that it is found on the Mediterranean coast of Spain, but that it is of very rare occurrence there. Three specimens only were obtained by him during the winter. Near Gibraltar it was more numerous. Mr. Layard ("Ibis," 1867, p. 249) mentions that in his voyage from England to Cape Town, when off Cape Finisterre he fell in with flocks of these birds. Mr. Wright mentions that a single example of this species was taken, about 1852, at Malta, and that in 1864 it was still preserved in the museum of Professor Delicatu.

During the breeding-season these birds assemble by hundreds, or, more frequently, by thousands, at certain localities, generally on extensive rocky islands, or on cliffs, or bold shores. Toward these points they usually converge early in the month of May. Notwithstanding the immense numbers that sometimes resort to the same rock, and although we often find these birds breeding in company with those of several other species, except when disturbed by the intrusion of man, there is a freedom from confusion and a prevalence of order and system in their operations that is quite remarkable. As if by mutual and common consent, not only do the different species keep apart, and occupy separate portions of their common breeding-ground, but each individual bird apparently knows its place and keeps to it, going at once to its own chosen spot to renew its egg when the nest has been despoiled of its treasure. It is very rare to find two distinct species breeding side by side, although Audubon speaks of having found the Razor-bill breeding in company with this species on the coast of Labrador.

When Audubon visited Labrador in 1832 he found this bird breeding by thousands on the Masse Rocks, near Great Macatina Harbor. These were several low islands, destitute of vegetation, and not rising high above the water. As he approached these islands the air became darkened with the multitudes of birds flying about. Every square foot of the ground seemed occupied by a Guillemot sitting erect on its solitary egg. On his landing, each affrighted bird left its egg hastily, ran a few steps, and launched into the air in silence, flying rapidly around as if to discover the object of the unwelcome visit; and then all alighted in the water at some distance, anxiously awaiting the departure of the intruder. Eggs — green and white, and of almost every color — were lying thickly over the whole rock; and these were collected by the eggers in astonishing quantities and taken to distant markets.

These wholesale depredations have been followed by the inevitable consequences; and when Dr. Bryant visited these same islands twenty-eight years later, he found them almost abandoned.

According to the last-named authority, this species breeds at various points from the extremity of Nova Scotia to Hudson's Bay, and is the most common bird on the Labrador coast. The extent to which these birds are persecuted may be imagined from the fact that though on the 23d of June young birds were common at the Gannet Rock — where they are but little, if at all, disturbed — Dr. Bryant had seen, up to the 20th of July, but one young bird on the Labrador coast. At the Masse Rock not more than a hundred eggs could be collected on the 2d of July; and the number of Guillemots breeding there was probably not a hundredth of what it was in Audubon's time.

When undisturbed, this bird lays but a single egg in a season; and this is of large size in proportion to that of the bird, and very variable in color, hardly any two being exactly alike. The ground-color, which is even more variable than are the shades of the markings, may be white, or bluish green, white tinged with reddish, with just a slight tinge of green, or with the latter color very deep and bright. The markings are generally a dark reddish brown, deepening in some almost to black. In a few instances the eggs are unmarked, some being entirely green or wholly white. Their extreme length is 3.31 inches, and their minimum length about 2.81; the breadth varies from 1.77 to 2.00. Their form is elongated pear-shape.

The Guillemot makes no nest; and sits in an upright position on her single egg, incubation lasting four weeks. The young bird is at first covered with a brownish-black, bristly, hairlike down, and is fed for a short time by the parent with pieces of fish. Mr. Waterton, on his visit to Flamborough Head, was assured by the men there that when the young bird reaches a certain size, it climbs upon the back of the old bird, and is conveyed by the latter to the ocean. Through a good telescope he saw numbers of the young Guillemots, still unable to fly, sporting in the sea, and others on the edges of the cliffs in such situations that had they attempted to fall into the water they would inevitably have been killed by striking upon the intervening rocks; and he therefore accepted the information of the rock-climbers as being the only probable explanation of the fact that the young bird reaches the water at so early an age.

Yarrell states that he has seen in the water at the base of high cliffs, in the Isle of Wight, young Guillemots so small that they could not have made the descent from the lofty site of their birthplace without having been killed. Yet these little birds knew perfectly well how to take care of themselves, and on the approach of a boat would swim and dive in various directions. Early in September these birds, young and old, quit the foot of the rocks near their breeding-places for the open ocean, where they remain until the following May.

This bird is said to remain about the rocks and bays of Orkney and Shetland all the year; and also on the coast of Iceland and among the Farne Islands. It was found by Sir Edward Parry and Sir James C. Ross, in their journey over the ice, as high as latitude 81°.

Uria ringvia.

The claim of this form, which so closely resembles the common Guillemot, to be ranked as of specific significance, is generally challenged by writers. Certainly there is no difference noticeable in the habits, and but little in the distribution, of the two birds. When found at all, it is almost invariably in company with the *troile;* but the latter is usually present in much the larger numbers. According to Gould, the *ringvia* is particularly common on the coast of Wales, where, as he was informed, the Bridled Guillemot is quite as numerous as the other form. It was first described in 1822, from a specimen obtained at Newfoundland by A. Valenciennes. It is considered a distinct species from the *troile* by Temminck, Thienemann, and other naturalists, both French and German. Degland and Gerbe give it as being only a variety of the common species. Temminck (IV. 577) remarks that Faber and Graba, who have resided both in Iceland and the Faröe Islands, are positive that both this form and the Thick-billed are only varieties of the common species. While allowing due weight to the opinions of two such competent judges, based upon observations made on the spot, he is unconvinced, especially as Brünnich's Guillemot is also reduced to a mere variety of *troile*, and not regarded a good species.

Audubon figures the *ringvia* as the male of the *troile*, evidently not appreciating the fact that the difference is not one of sex.

Dr. Bryant, who met with this bird on Gannet Rock, says in regard to it: "As this bird was unfortunately confounded by Audubon with the preceding species [*troile*], it is at present impossible to ascertain what were its limits or numbers at the time of his visit. There can be little doubt, however, that it was not at all rare on the Labrador shore. None of these birds were seen by me at any place, except on Gannet Rock, though I think it must breed at other points on the coast. The eggs are said by Naumann to be larger than those of the Foolish Guillemot, the shell to be smooth, and the spots to be seldom large, etc. The largest Guillemot egg found by me was one of the present species; but in respect to coloration I notice no particular mark by which they could be distinguished from the others. The largest and handsomest egg procured is one of the green variety, and marked over the whole surface with lines presenting very much the appearance of Chinese characters; it resembles, however, specimens of the eggs of *Uria troile*, and I see no character by which it could be distinguished from them."

Degland and Gerbe, while treating this form as a variety, state that it inhabits the Arctic regions generally, including Iceland, the Faröes, and Newfoundland; and is a migratory visitor on the coast of France, individuals having been found dead on the shores of the English Channel, and others killed along the French coast. On the 7th of June, 1846, a male and two females were shot — so M. Degland was informed by letter — at Aiguilles d'Étretat. This species, to the knowledge of the writer, M. Hardy, has twice been found breeding in the last-named locality. It was nesting in holes in the rocks on the border of the sea, in company with the *troile*. It laid a single egg, very pyriform, of a brownish white, with a few spots of ashy-gray and sinuous zigzag lines of mingled red and brownish black. In other respects the egg of this species varies as much as do those of the *troile*. They vary in length from 3.15 to 3.35 inches, and in breadth from 1.94 to 2.04. These measurements differ from those of Dr. Bryant, who gives 3.10 as the maximum length, and 1.96 as the greatest breadth. M. Gerbe, in a note, referring to the views of Faber and Graba as to the specific unity of *troile, ringvia,* and *lomvia,* adds that Thienemann, who also visited the same countries, is of an entirely different opinion. He considers these three forms as three distinct species; and while, on this point, the opinions of ornithologists remain very much divided, M. Gerbe states that — so far as this form is concerned — if it is not a good species, it is certainly a well-marked race. Thienemann founded his belief in the diversity of these species on the constant differences in their eggs; and Mr. Proctor, of Durham, England, who has visited the breeding-places of these birds in Iceland, agrees with Thienemann entirely. He visited Grimsey, an island forty miles north of Iceland, where he found these three forms breeding on the rocks. They were regarded by all the inhabitants as three entirely distinct birds. Brünnich's Guillemot was the most numerous, and was called *Stutnefia*. The *troile* was next in point of numbers, and was known as *Langnefia*. The Ringed Guillemot was the least numerous, and was called *Hring langnefia*. The eggs of all three kinds were obtained; and the distinctions between them were well known to the fishermen, who separated them, when put together, without difficulty or hesitation. The eggs of the *ringvia* were the most rare, less from the smaller number of the parent birds than from the circumstances of their breeding away from the others, far lower down on the precipitous ledges, where they were inaccessible from below, and more difficult to obtain by those lowered down from above. The Common Guillemot and the Ringed do not breed together, but each keeps by itself.

I attach far more importance to the fact that these forms, in nesting, appear thus to keep exclusively by themselves, than to the supposed differences in eggs, on which, as evidence of specific separation, we cannot safely rely. Like the eggs of the Arctic, Common, and Roseate Terns, those of the three forms vary so much, and appear to run into such corresponding variations, that no certain rule, in my judgment, is yet possible. On the other hand, the careful separation of breeding-places is a more sure sign of specific demarcation. All the eggs that I have ever seen of this variety (*ringvia*) are uniformly large, have a constant white ground, and are marked with red and brown lines, long, slender, and irregular. Dr. Bryant's experience was, however, different, as we have seen.

According to Professor Reinhardt, the *Uria ringvia* is found in Greenland, but is a very rare bird there. Captain Elmes found it breeding on the Island of Berneray, one of the outer Hebrides. It was in company with the more abundant *Uria troile*, and was, in proportion to the latter, as one to ten or twelve, which corresponds with the observations of other persons on Handa Island and Ailsa Craig. He took several of the eggs on each of which he actually saw one of the Ringed Guillemots sitting, and found that they vary as much as the others, though more were marked with streaks than with blotches.

This bird is comparatively rare on the New England coast, but has been met with in winter, and is more abundant off the more easterly portions of the coast of Maine than elsewhere.

Examples of this species obtained by Dr. Bryant on Gannet Rock, in the Gulf of St. Lawrence, have a ground of cream-color, and the markings are black. They measure 3.25 inches in length, and from 2.00 to 2.05 in breadth.

Uria troile californica.

THE CALIFORNIAN GUILLEMOT.

Uria troile, Newb. Pacific R.R. Rep. VI iv. 1857, 110 (not *Colymbus troile*, Linn.).

Uria Brünnichii, Heerm. Ib. X. 1859, Birds, 75 (not of Sabine, 1818).

Catarractes californicus, Bryant, Pr. Boston Soc. 1861, 11, figs. 3, 5 (Farallon Islands, coast of California).

Lomvia californica, Coues, Pr. Ac. Nat. Sci. Philad. 1862, 79, fig. 16.

Lomvia troile, var. *californica*, Coues, Key, 1872, 346; Elliott's Alaska, 1875, 210.

Lomvia troile californica, Ridgw. Pr. U. S. Nat. Mus. Vol. 3, 1880, 212; Nom. N. Am. B. 1881, no. 763 *a*. — Coues, 2d Check List, 1882, no. 875.

Hab. Pacific coast of North America, breeding from California (Farallones) north to the Prybilof Islands, and across Aleutian chain to Kamtschatka.

Sp. Char. Similar in colors, in all stages, to typical *troile*, but averaging larger in all its measurements, except the length of the tarsus, which is slightly shorter; all the outlines of the bill usually less curved than in *troile*.

Total length, about 16.00 inches; extent, 27.00; wing, 7.85–8.80 (average, 8.30); culmen, 1.60–2.05 (1.86); gonys, 1.15–1.40 (1.27); depth of bill through angle, .55–.62 (.57); tarsus, 1.35–1.60 (1.50); middle toe, 1.65–1.90 (1.74).[1]

The characters adduced by authors for distinguishing this race from true *troile* of the North Atlantic we find exceedingly variable, and practically entirely inconstant, the individual variation in the contour of the bill being very great, as may be seen by the measurements given above. All the dimensions, however, are almost constantly and decidedly larger.

This appears to be the Pacific representative of *U. troile*, and is, so far as America is concerned, confined to the Pacific coast, from Southern California to Alaska. Mr. Dall states that it was obtained, with its eggs, both at Sitka and at Kadiak. He afterward found it at Unalashka, in company with *Simorhynchus cristatellus*, but much less common than that species. In his Notes on the Birds of the Aleutian Islands west of Unalashka he speaks of this species as being abundant, and apparently a resident all through the islands. It is less common and more shy than the *Cepphus columba*, but, unlike that species, congregating in immense flocks a few miles off shore. He has never met with the *columba* in large flocks — never more than two or three individuals together.

Dr. Cooper, when at Monterey in May, 1862, noticed these birds in the open bay. Their presence there at that season seemed strange, and rendered it probable that they were breeding in the vicinity. Dr. Cooper also remarks that the chief locality — indeed the only one known to him — to which this species resorts during the breeding-season is the Farallones. There these birds swarm, clustering like bees on every ledge and slope of the ragged peaks which constitute these islands, and depositing their eggs on the bare rock. Each bird, if undisturbed, lays but a single egg, which it incubates in a standing position. It is able to walk tolerably well when standing nearly erect.

The abundance and the large size of the eggs of this species have made them a valuable article of import to San Francisco. The Farallones, twenty-five miles from the mouth of the bay of San Francisco, are admirably situated for furnishing this supply, as they are too far to be easily reached, and the birds are consequently free from being wantonly and unnecessarily disturbed. They begin to lay from the 17th to the 27th of May — so Dr. Cooper was informed by Mr. Tasker, of the lighthouse — and eggs can be found as late as August, since the many robberies to which the birds are subjected oblige them to lay several times. As the eggs are laid on the bare rock, and often on narrow ledges which are sloping and slippery, there are also numerous chances of breakage; and the birds have many enemies besides man, so that Nature has provided them with the ability to lay many successive times in order that some, at least, of the eggs may be hatched. Yet as each female lays but one egg at a time, and as the birds are robbed of many thousands, the wonder is that so many birds are successfully raised as must be in order to form the enormous flocks that are still seen together. Probably if they were scattered over a more extensive surface, or along the whole coast, their numbers would not seem so great. Even now, the oldest eggers begin to see a diminution in the numbers; and probably as the old birds die off there will be much fewer raised to supply their places. There is, however, one fact in their favor; namely, that the market value of their eggs has decreased so much with the increase in the product of eggs of the domestic Hen, that they are now worth little more than one third of the price of the latter; and consequently the gathering of them is no longer profitable after they begin to be a little scarce. This occurs about the first of July, or after the gathering season has lasted about six weeks; and the birds are then left to themselves. The mode of gathering the eggs is as follows: The island is divided into two parts, and each is hunted over every other day. After noon, the eggers having previously broken every egg they can find, so as to secure freshness for the next lot, start out with large baskets, which they leave at convenient points. The men then scatter, and collect the eggs from the ledges, carrying them down in a bag suspended in front, from which they are transferred to the baskets; and when these are full, a covering of dry seaweed is put over them to protect them from the Gulls, and they are carried to the storehouse, and thence shipped to San Francisco.

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[1] Average measurements of thirteen adults.

On the approach of the men the Murres reluctantly flutter off, and often drag with them the precious eggs, which are dashed to pieces on the rocks, while the birds fly to some distant point on the rocks or the water, making only a faint croaking sound, the only note with which they seem to be gifted. At this time the Gulls, which have been following the eggers with loud screams, watching their opportunity, sometimes seize an egg by sticking their open bill into it, and fly off to eat its contents at their leisure. Dr. Heermann relates an instance in which two Gulls made a feint of attacking the Murre in front, while another stole up behind and seized the egg, when the three flew off together to devour it.

Specimens of the eggs of this Murre from the Farallones show, according to Dr. Cooper, the following differences: The ground-color is white, greenish, blue-green, sea-green, yellowish, or cinnamon, and they are either unspotted, or blotched, speckled, or variously streaked with different shades of brown or black. They measure generally from 3.30 to 3.53 inches in length, by from 1.90 to 2.05 in width. Occasionally very small ones — which are possibly abortive — measure only 2.05 by 1.45 inches.

Limited numbers of this species were found by Mr. H. W. Elliott on the Prybilof Islands, perched on the cliffs with the "Arrie," the two resembling each other so closely, and being so much alike in their habits, that it requires a practised eye to distinguish them, unless the observer is very near. The largest gathering of these birds seen at any place on these islands was a flock of about fifty, at the high bluffs on St. George's. They are generally scattered, by ones, twos, and threes, among thousands and tens of thousands of the *arra*.

The following extracts from a letter written by Dr. W. O. Ayres are interesting as showing the early history of the traffic in the eggs of this species. It is dated San Francisco, Oct. 13, 1854: The "Farallones de los Frayles" are a group of small islands lying a little over twenty miles west of the entrance to the Bay of San Francisco. They are almost inaccessible, entirely uninhabited — with a single exception — and afford therefore very naturally a resort for great multitudes of birds. Some time since, a company was organized in this city for the purpose of bringing the eggs of these birds to market. An imperfect idea of the number of the birds may be formed from the fact that this company sold here during the last season — a period of less than two months, in June, July, and August — more than five hundred thousand eggs; that all these were gathered on a single one of the islands; and that in the opinion of the eggers, not more than one egg in six of those deposited on that island was gathered. The eggs were gathered in only one limited portion of the island known as the Great Farallon, called the Rookery, in which one species of bird they called the Murre swarmed in myriads, there being no other species among them. The eggs vary to a greater degree than I have known in any other instance.

Accompanying this letter are outlines of seven eggs (two of them evidently those of *Cepphus columba*) and the measurements of twelve others. The broadest measures 3.60 by 2.23 inches, while two others measure, one 3.66 by 1.87, and the other 3.64 by 1.77. One very pointed egg measures 3.43 by 1.81 inches. The least length is 3.07 inches. The ground-color of this egg is usually a pure white; but quite frequently a bluish-white, greenish-white, cream-white, buffy white, blue, green, dilute rufous, etc., constitute the ground. The markings are combinations of subdued lavender, pale brown, and deep brownish black. In some these are sparse; others are thickly covered by them.

Uria lomvia.

a. Lomvia. BRÜNNICH'S GUILLEMOT.

Alca lomvia, LINN. S. N. ed. 10, I. 1758, 130, no. 4.
Cataractes lomvia, BRYANT, Pr. Boston Soc. 1861, 9, figs. 1, 4.
Uria svarbag, BRUNN. Orn. Bor. 1764, 27, no. 110 (winter pl.).
Lomvia svarbag, COUES, Pr. Ac. Nat. Sci. Philad. 1868, 80.
Uria Brünnichii, SABINE, Trans. Linn. Soc. XII. 1818, 538. — SW. & RICH. F. B. A. II. 1831, 477. NUTT. Man. II. 1834, 529. — GOULD, B. Eur. V. 1837, pl. 398. — AUD. Orn. Biog. III. 1835, 336, pl. 345; B. Am. oct. ed. VII. 1844, pl. 472.
Lomvia arra Brünnichi, RIDGW. Nom. N. Am. B. 1881, no. 764 *a*.
Uria arra, CASS. in Baird's B. N. Am. 1858, 914 (not of PALL. 1826). — BAIRD, B. N. Am. 1859, no. 731.
Lomvia arra, (pt.) COUES, Key, 1872, 346; 2d Check List, 1882, no. 876.
Uria Francesii, LEACH, Trans. Linn. Soc. XII. 1818, 588. — DE KAY, N. Y. Zool. Birds, 1844, 280.
Uria polaris, BREHM, Handb. Vög. Deutschl. 1831, 984.

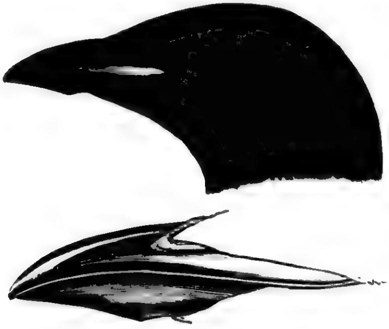
b. Arra. THE THICK-BILLED GUILLEMOT.

Cepphus arra, PALL. Zoog. Rosso-As. II. 1826, 347.
Uria arra, CASS. Pr. Philad. Acad. 1864, 324.
Lomvia arra, COUES, Key, 1872, 346 (part); Elliott's Alaska, 1875, 211; 2d Check List, 1882, no. 876 (part). — RIDGW. Nom. N. Am. B. 1881, no. 764.
Uria Brünnichii, of authors referring to the Thick-billed Guillemot of the North Pacific.

HAB. Coasts and islands of the North Atlantic, Arctic, and Pacific oceans; on the Atlantic coast of North America, south in winter to New Jersey, breeding from the Gulf of St. Lawrence northward. On the Pacific side the typical form replaced by the *arra* (Prybilof Islands, Kadiak, Aleutians, Kamtschatka, etc.).

a. Lomvia.

Sp. Char. *Adult, breeding-plumage:* Entire upper parts, *including pileum and nape*, glossy fuliginous-black, the secondaries narrowly tipped with white; sides and under part of head and neck rich velvety dark snuff-brown, shading gradually into the black above it. Lower parts continuous white, ending anteriorly, on the jugulum, in an obtuse angle, extending a greater or less distance into the dark brown of the foreneck; outer webs of exterior feathers of the sides and flanks broadly edged with sooty black. Bill uniform deep black, the basal half of the maxillary tomium plumbeous, sometimes conspicuously light colored; iris brown; legs and feet dusky brown in the dried skin. *Winter plumage:* Whole throat, foreneck, auricular region, and sides of the occiput white, the upper border of the auriculars crossed by a narrow blackish stripe; white latero-occipital space and lower part of foreneck, faintly mottled transversely with dusky. Upper parts as in the summer plumage. *Young:* Similar to the winter plumage, but without white on the sides of the occiput. *Downy young:* Fuliginous-dusky, the lower parts white centrally, shading exteriorly into smoky grayish; head and neck variegated with irregular pale smoky buff streaks and filamentous downy tufts of the same color.

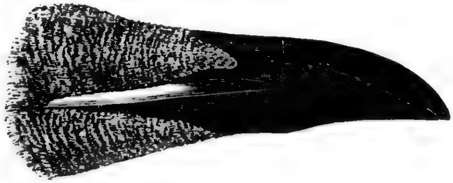


U. lomvia, summer plumage.

Total length, about 18.50 inches; extent, 30.00 to 32.00; wing, 7.45–8.80 (average,[1] 8.24); culmen, 1.40–1.50 (1.45); gonys, .75–.90 (.83); depth of bill, through angle, .52–.58 (.55); tarsus, 1.40–1.55 (1.45); middle toe, without claw, 1.65–1.75 (1.70).

b. Arra.

Sp. Char. Precisely similar in colors, in all stages of plumage, to typical *lomvia*, but decidedly larger in all its measurements, and with the maxillary tomium less distinctly light colored toward the base.



U. lomvia arra.

Wing, 8.15–9.25 inches (average, 8.71); culmen, 1.45–1.75 (1.65); gonys, .85–1.00 (.92); depth of bill through angle, .55–.60 (.58); tarsus, 1.45–1.60 (1.51); middle toe, without claw, 1.70–1.90 (1.81).

Though by many the Brünnich's Guillemot has been regarded as merely a local race of the common species, it has of late become generally regarded as having good claims to be considered a distinct species. It appears to have to a large degree the same distribution as has the *troile*, and so far as it has been observed, the same habits.

[1] Of eight adult examples.

It is alleged by Thienemann and others that there are always distinctive differences to be found between its eggs and those of either *troile* or *ringvia*. But of this I am not able to find any satisfactory evidence. This is, if anything, the more Arctic species; and where found in more northern latitudes appears to be much more abundant than the *troile*.

Near Horn Sound, Spitzbergen, Messrs. Evans and Sturge met with it in immense numbers. The birds were in company with the Little Auk, and flew about in large flocks, settling close around the vessel, playing and diving in all directions, and seeming to be quite regardless of the presence of intruders, keeping up all the while a shrill chattering.

It is also much more abundant in the North Pacific and Behring Sea, where the *ringvia* has not been observed, and where the *troile* has been rarely met with. Mr. Dall mentions it as not uncommon at Kadiak, and abundant at St. George's, where it breeds in immense numbers on the perpendicular cliffs. It is not given as occurring in the Aleutian Islands.

Mr. Henry W. Elliott states that this species — the great Egg-bird of the North Pacific — frequents the Prybilof Islands by millions. This *Uria* and one other, the *U. californica*, are the only birds of this genus found there. They appear very early in the season, but do not begin to lay until the 18th or 25th of June; and in open, mild winters these birds are said to be seen in straggling flocks all around the islands. He considers it certain that the birds of this species do not all migrate from that sea and the vicinity of the Aleutian Islands. They lay their eggs upon the points and narrow shelves on the faces of the cliff-fronts to the islands, making no nests, but standing over the eggs, side by side, as thickly as they can be crowded together. They quarrel desperately, and so earnestly that all along the high bluffs on the north shore of St. George's hundreds of dead birds are lying, having been killed by falling on to the rocks while clinched in combat with rivals in mid-air. The birds lay but a single egg on the bare rock. The egg is large and very fancifully colored, having a bluish green ground with dark-brown mottlings and patches; but it is exceedingly variable in size and coloring. The outline of the egg is pyriform, and sometimes more acute. This is the most palatable of all the varieties found on the islands, having no disagreeable flavor, and when perfectly fresh being fully as good as a Hen's egg. Incubation lasts nearly twenty-eight days, and the young come out with a dark thick coat of down, which within six weeks from hatching is supplanted by the plumage and color of the old birds. They are fed by the disgorging of the parents, apparently without intermission, and utter all the while a harsh, rough, and decidedly lugubrious croak.

On St. George's Island, while the females begin to sit, toward the end of June and first of July, the males go flying around, at regular hours in the morning and evening, in great files and platoons, always circling against or quartering on the wind, forming a dark girdle of birds more than a quarter of a mile broad and thirty miles long, whirling round and round the island. The flight of the "Arrie" is straight, steady, and rapid, the wings beating quickly and powerfully. It makes no noise, and utters no cry, save a low, hoarse, grunting croak, and that only when quarrelling or mating.

Captain W. H. Feilden ("Ibis," October, 1877) observed two individuals of this species in August as far north as Buchanan's Strait (lat. 79° N.), but it was not seen again until the return of the Expedition southward in September, 1876, after regaining navigable waters south of Cape Sabine. The north waters of Baffin's Bay appeared to be the northern limits of the species in this direction, nor were there any breeding-places north of Cape Alexander.

Dr. Walker, in the Voyage of the "Fox," mentions finding this species in thousands on the coast of Greenland, and Professor Reinhardt gives it as a common resident species of that island. Professor Newton found this the most common, with perhaps one exception, of the birds of Spitzbergen. Dr. Malmgren regarded it as altogether the most numerous, even more so than the *Mergulus alle* (= *Alle nigricans*). It was breeding as far to the north as Walden Island, in lat. 80° 38′ N. Its food, according to Professor Newton, is chiefly crustaceans; and according to the observations of Professor Malmgren, it also lives a good deal on fish. By the end of August all the breeding-places on the north coast had been deserted, and about the same time the birds that had previously thronged the Alkenhorn in such countless numbers were rapidly quitting it. Eastward of the South Cape he did not meet with this species at all. It is given by Middendorff as one of the birds of Siberia, occurring in the most northern portions, on the coast of the Arctic Ocean. Mr. Gillett met with it on Nova Zembla, where it was abundant along the coast, breeding in all the cliffs. Von Heuglin in his subsequent visit to the same region makes a very similar statement.

In winter this bird is quite common along the entire New England coast, and is especially abundant in the lower portions of the Bay of Fundy, where a few still breed every summer. Dr. Henry Bryant found it breeding abundantly on Gannet Rock, in the Gulf of St. Lawrence, and only a little inferior in numbers to the *troile*. He noticed nothing peculiar in the habits of this species differing from what is already known in reference to the genus. He states that though the shape of the eggs of this species is generally more ovate than that of the *troile* or *ringvia*, he was not able to find any character by which they can be with certainty distinguished. Their maximum length he gives as 3.11 inches, their minimum 2.75; their breadth varying from 1.77 to 1.89.

According to Mr. W. Thompson, this species is found, and probably breeds, on the coast of Kerry, Ireland. Sir James C. Ross met with it at Uist, the most northern of the Shetland Islands, and in several parts of Scotland; and Macgillivray received specimens from the Orkneys. A single accidental specimen is recorded as having been taken near Naples, where it is still preserved

Mr. Proctor found this bird breeding in great abundance on the Island of Grimsey, north of Iceland, where it was the most numerous of the *Uriæ*, and where it is known to the inhabitants by the name of *Stutnefia*.

Mr. Kumlien mentions large breeding-places of this bird about Capes Mercy and Walsingham, and on the islands in Exeter Sound. They are also very abundant on the Greenland coast, breeding by thousands in many localities.

In the winter it usually keeps well off the coast, but is occasionally forced into the bays by violent or long-continued easterly winds. It becomes confused by heavy falls of snow, and in its attempts to escape by flight loses its way, and is driven inward upon the land, where it perishes with cold. I received one in 1839 that had been picked up in a field in Hingham Centre. It was uninjured, and no other cause could be assigned for its death than cold.

Eggs of this species in the Smithsonian collection are from Gannet Rock in the Gulf of St. Lawrence, the Arctic coast, and the Prybilof Islands. The ground-color of these eggs varies remarkably, some being white, others of a deep buff, a bright grass-green, a pale blue, a deep blue, intermediate tints of blue, etc. The markings of some are in lines, others in blotches and spots varying from a light umber-brown to a deep black. Four eggs selected as typical of their varying size and shape measure: 3.10 by 1.95 inches; 3.30 by 1.95; 3.05 by 2.05; 3.00 by 1.90.

GENUS **CEPPHUS**, PALLAS.

Uria, BRISS. Orn. VI. 1760, 70 (part). et AUCT.
Cepphus, PALL. Spic. Zool. V. 1769, 33 (type, *C. lacteolus*, PALL., = *C. grylle, albino*).
Grylle, LEACH, in Ross's Voy. Disc. N. W. Pass. App. 1819, p. li (type, *G. scapularis*, LEACH, = *Uria grylle*, BRÜNN., + *U. Mandti*, LICHT.). — BRANDT, Bull. Ac. St. Petersb. II. 1837, 346 (type, *U. grylle*, BRÜNN.).

CHAR. Size medium. Bill decidedly shorter than head, about equal in length to the tarsus, moderately compressed; upper and lower outlines straight and nearly parallel for about the basal half (or more), the terminal portion of the culmen gently decurved, the gonys (which is less than half as long as the culmen) gently ascending, straight, or slightly convex; nasal fossæ only partly feathered, occupied chiefly by membrane, the nostrils narrow, slit-like, in the lower edge of the fossæ; no furrow in the plumage behind the eye. Color in summer uniform blackish, with or without a white wing-patch.

C. Mandtii, summer dress.

The characters given above are merely the more prominent ones distinguishing this genus from its allies, more especially *Uria*, which by many authors has not been considered as distinct from *Cepphus*.

Five species are known, all but one of them being certainly North American; they differ as follows: —

A. A large white patch on the outer surface of the wing.
  a. Lining of wing pure white.
    1. **C. Mandtii.** Greater wing-coverts white to the extreme base, sometimes with a little dusky along the basal portion of the shafts. Wing, about 6.50 inches; culmen, 1.00–1.10; gonys, .50; depth of bill through middle of nostril, .35; tarsus, about 1.30; middle toe, with claw, 1.60–1.65. *Hab.* Circumpolar Regions and Northern North America, south in winter to New Jersey and Norton Sound, Alaska.

2. **C. grylle.** Greater wing-coverts with at least their basal half black, this often showing as a narrow bar beyond tips of anterior row of coverts. About the same dimensions as *Mandtii*, but bill larger and stouter. Culmen, 1.20–1.30; gonys, .55–.60; depth of bill through middle of nostril, .40–.45. *Hab.* Coasts of Northern Europe, south to Denmark and northern parts of British Islands; coast of Newfoundland (?); Eastport, Me.; south in winter to Philadelphia.

b. Lining of wing smoky gray.

3. **C. columba.** Greater wing-coverts black basally, this increasing in extent toward edge of wing, where occupying almost the whole of the outermost feather, thus producing a broad black "wedge" between the two white areas. Wing, about 7.00 inches; culmen, 1.20; gonys, . ; depth of bill, . ; tarsus, 1.25; middle toe, with claw, 1.90. *Hab.* Pacific coast of North America, from California to the Aleutian Islands, and across to Kamtschatka and Northern Japan.

B. No white on outer surface of wing.

4. **C. carbo.** A whitish patch surrounding the eye. Wing, about 7.75 inches; culmen, 1.55–1.70; gonys, .75–.80; depth of bill through nostril, .50; tarsus, about, 1.36; middle toe, with claw, 2.10. *Hab.* Coasts of Northeastern Asia, from Northern Japan and Kuriles to the Okotsk Sea; Behring Island, Kamtschatka, accidental? (STEJNEGER); Unalashka?? (PALLAS).

5. **C. Motzfeldi.** No white on side of head. Culmen, 1 inch 9 lines; commissure, 2 inches 3 lines; bill from nostril, 1 inch; tarsus, 1 inch 6 lines. *Hab.* High North Atlantic (west side of Cumberland Gulf, Greenland, and Iceland).

Cepphus Mandtii.

MANDT'S GUILLEMOT.

Colymbus grylle, PHIPPS, Voy. N. P. 1774, 186 (not of LINN.).

Uria grylle, CASS. in Baird's B. N. Am. 1858, 911; Phil. Acad. 1862, 323. — BAIRD, Cat. N. Am. B. 1859, no. 726. — NELSON, Cruise Corwin, 1883, 117. — COUES, Key, 1872, 345 (part); Check List, 1873, no. 631; 2d ed. 1882, no. 871. — RIDGW. Nom. N. Am. B. 1881, no. 760.

Cepphus grylle, NEWTON, P. Z. S. 1864, 495.

Grylle scapularis, LEACH, Ross's Voy. N. W. Pass. App. 1819, p. li, in Thoms. Ann. Philos. XIII. 1819, 60 (part).

Uria scapularis, STEPH. Gen. Zool. XII. 1824, 250, pl. 64.

Uria Mandtii, LICHT. in Mandt's Obs. Itin. Dissert. 1822, 30; VERZ. Doubl. 1823, 88. — FABER, Isis, 1824, 980. — KEYS. & BLAS. Wirb. Eur. I. 1840, p. xcii. — NAUM. Nat. Deutsch. XII. 1844, 462.

Cepphus Mandtii, NEWTON, Ibis, 1865, p. 517. — STEJN. Tr. U. S. Nat. Mus. 1884.

Uria grylle Mandtii, SCHLEG. Rev. Crit. 1844, p. cvii.

Uria glacialis, BREHM, Lehrb. Vög. Eur. 1824, 924, 1008.

Uria Meisneri, BREHM, t. c. 1006.

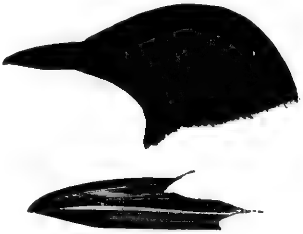
Uria grylle, var. *glacialis*, SUNDEV. Voy. Scand. Atl. 1847, Livr. IV. pl.

HAB. Circumpolar Regions; on the western coasts of the Atlantic, breeding south to Hudson's Bay and coast of Labrador, and in winter migrating as far as the coast of New Jersey; in Western Arctic America passing through Behring's Straits in winter as far as Norton Sound.

SP. CHAR. *Adult, in summer:* Uniform black (more sooty below), showing a faint gloss of "invisible" green in certain lights. Wings with a large unbroken patch of white, including the greater, middle, and posterior lesser coverts, *these feathers all white to the base.* Axillars, entire lining of the wing, and basal half (or more) of inner webs of the primaries, unbroken pure white. Bill deep black; interior of mouth, with legs and feet, deep vermilion-red; claws black; iris dark brown. *Winter plumage:* Wings and tail as in the summer plumage; rest of the plumage pure white, the pileum, back, scapulars, and upper part of rump varied with black, the whole of the concealed, and part of the exposed, portion of the feathers being of the latter color. Feet dull red. *Young, first plumage:* Similar to the winter plumage, but white wing-patch broken by blackish tips to all the feathers (their bases still white, however), the secondaries and primary coverts with terminal spots of white, and rump and lower parts indistinctly barred with grayish dusky. Pileum showing very little concealed dusky. *Downy young:* Uniform blackish-fuliginous, paler and more grayish below.

Total length, about 12.50 to 13.50 inches; extent, 22.00 to 23.00; wing, 6.25–7.20; culmen, 1.00–1.20; gonys, .45–.55; depth of bill through middle of nostril, .35–.40; tarsus, 1.20–1.30; middle toe, without claw, 1.25–1.35.[1]

Specimens from various localities agree very closely in coloration. The only one sufficiently abnormal to call for special mention is No. 76318, Kingwah Fiord, Cumberland Sound, June 9, 1878; L. KUMLIEN, collector. This has the seven outer primaries marked with a small white terminal spot, anterior to which are several grayish transverse bars, like "water-marks." The claws, instead of being jet black, are pale brownish yellow ("light pink" in life).



This species is included by Dr. Bessels, under the name *Uria grylle*, in his list of species taken by the "Polaris" Expedition in Smith's Sound; and Captain Feilden found it breeding at various points along the shores of Smith's Sound and northward, especially at Washington Irving Island, Dobbin Bay, Cape Hayes, and Bessels Bay. It was not ascertained to breed north of Cape Union. Two or three of these birds were seen feeding in pools on the floe as far north as lat. 82° 33′ N.; but these were evidently stragglers.

Dr. Walker, in his Notes upon the Birds observed in the Voyage of the "Fox," mentions his having procured this species in midwinter in 1858 and 1859; and the Black Guillemot is also included by Professor Reinhardt among the birds of Greenland, resident throughout the year.

Richardson states that this Guillemot abounds throughout the Arctic seas and straits, from Melville Island to Hudson's Bay, and that it remains — though in diminished numbers — throughout the winter in the pools of open water that occur among the ice-floes even in the highest latitudes.

Mr. Hearne, in his "Journey to the Northern Ocean" (p. 428), states that this bird is known in the Hudson's Bay Region as the "Sea Pigeon." It is said to frequent the shores both of the Bay and of the connecting straits in considerable numbers, but more particularly the northern parts, where it flies in large flocks; to the southward it is seen only in pairs. In weight it is said to be fully equal to a Widgeon, though to appearance not so large. It usually makes its nest in holes of rocks, and lays two eggs that are justly regarded as a great delicacy, being excellent eating. Referring to the statement of Mr. Pennant, that this Guillemot braves the coldest winters in that region, he states that it is never known to makes its appearance near the land after the frost becomes severe.

This is eminently a resident species, occupying one locality continuously, provided it finds there constant supplies of food. In localities that become ice-bound, or where in winter food is not abundant, we find it shifting its quarters to more attractive regions.

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[1] Ten adults. The largest in the series are a specimen in summer plumage from Herald Island, and one in winter dress from St. Michael's, Alaska.

Cepphus grylle.

THE BLACK GUILLEMOT.

Alca grylle, LINN. Syst. Nat. ed. 10, I. 1758, 130.

Uria grylle, BRÜNN. Orn. Bor. 1764, 28. — FABER, Isis, 1827, 635. — MACG. Hist. Brit. B. V. 1852, 331. — DEGL. & GERBE, Orn. Eur. II. 1867, 603.

Colymbus grylle, LINN. S. N. ed. 12, I. 1766, 220.

Cepphus grylle, BREHM, Handb. Vög. Deutschl. 1831, 987. — NAUM. Naturg. Vög. Deutschl. XII. 1844, 461. — NEWTON, Ibis, 1865. 519.

Uria grylloides, BRÜNN. Orn. Bor. 1764, 28 (= changing plumage).

Uria balthica, BRÜNN. l. c. (= immature or winter plumage).

Uria leucoptera, VIEILL. Nouv. Dict. XIV. 1817, 35.

Uria arctica, BREHM, Lehrb. Eur. Vög. 1824, 988.

Cepphus faeroeensis, BREHM, Handb. 1831, 990.

Uria grœnlandica, GRAY, List Gen. B. 1840, 98.

HAB. Coasts of Northern and Northwestern Europe, from the White Sea to Finland and the Danish islands in the Baltic; Hebrides, St. Kilda, Shetland Islands, Orkneys, Faröes, and Iceland; in North America, found in summer from Eastport, Me. (specimen in National Museum), to Newfoundland, and probably Southern Labrador; also in Southern Greenland.

SP. CHAR. *Adult, in summer:* Similar to *C. Mandtii*, but greater wing-coverts with at least the basal half black, this seldom quite concealed by the overlying row of coverts, and often showing distinctly as a narrow band. *Winter plumage:* Similar to corresponding stage of *C. Mandtii*, but plumage much darker, the back, scapulars, and rump being black barred with white, only the extreme lower part of the rump being uniform white; white of lower parts more distinctly clouded or barred with grayish dusky, and pileum with dusky prevailing. Wing-coverts with basal half, or more, abruptly dusky, and secondaries and primary coverts without white terminal spots. *Young, first plumage:* Similar to the winter plumage, but white wing-coverts distinctly tipped with brownish black. *Downy young:* Uniform sooty blackish, lighter and grayer below (hardly, or not at all, distinguishable from corresponding stage of *C. Mandtii*).

Wing, 6.00–6.80 inches; culmen, 1.20–1.30; gonys, .50–.60; depth of bill through middle of nostril, .40–.45; tarsus, 1.20–1.35; middle toe, without claw, 1.30–1.40. (Six summer adults.) Bill deep black; interior of mouth, with legs and feet, intense vermilion-red (in life); iris dark brown.

This species may be readily distinguished in any stage, except the downy young, from *C. Mandtii* by the characters given above. A fine adult from Eastport, Me., collected by Professor Baird, July 1, 1872 (No. 62381, U. S. Nat. Mus.), agrees minutely with Scandinavian examples.

In this species, as well as in *C. Mandtii* and *C. columba*, there is a remarkable difference in the intensity of the black, according to the length of time which has elapsed since the specimen was prepared. Examples of the present species killed in April, 1884, are now (July 2, 1884) deep coal-black beneath, there being scarcely any difference in color between the upper and lower parts. On the other hand, skins several years old are without exception decidedly fuliginous, with the lower parts very appreciably browner than the upper. The difference is indeed very striking when recently prepared and older specimens are placed side by side. The downy young differ in the same manner, freshly prepared birds being decidedly slaty, while those which have been prepared several years are smoky brown.

Like all the members of this very remarkable family, the Black Guillemot is an inhabitant of the open sea, never frequenting or resorting to the land except for purposes of reproduction; keeping off from the shore, even in midwinter, and seeking safety in the open ocean from the fury of tempestuous wintry weather, rather than in sheltered bays that are ice-bound and inaccessible at that season. On the European coast it breeds from the northern part of Great Britain to the Arctic Ocean.

Along the coast of Eastern Maine and in the Bay of Fundy an inconsiderable number breed and pass the year. In the winter they are joined by a much larger number driven out by the ice from more northern places, where this barricade compels them to move to more open water. Among these, Mr. Boardman informs me, it is no uncommon thing to find individuals of this species in their full black plumage in midwinter.

Off the coast of Norway the Messrs. Godman found this bird wintering in the latitude of Bodö. During the summer it was everywhere common along the entire coast of Norway, where its eggs are much sought for, and esteemed as a great delicacy by the natives.

In the British Islands it is more abundant in the more northern portions. It is a resident species in the north of Ireland, and among the Hebrides and other Scottish islands it breeds more or less commonly; Mr. Macgillivray met with it among the Hebrides. Mr. Salmon found it among the Orkneys in 1831, where it is called the "Tyste." He found it breeding on a small holm eastward of Papa-Westra, where it was very numerous, and would scarcely move off the rocks when approached. In every instance two eggs were found together, deposited on the bare ground. He describes the egg as white, slightly tinged with green, blotched, spotted, and speckled with ash-gray, reddish brown, and very dark brown. The length is 2.25 inches; the breadth 1.50. The first covering of the young birds is a grayish-black down; and the feathers, which soon appear, are mottled with black and white. The young of this species do not leave the nest until perfectly fledged, and able to provide for themselves. Then the care of the parents ceases, and they do not even keep company with their young. Their food is chiefly crustaceans and small fishes.

In the summers of 1850 and 1851 I found the Black Guillemot breeding in the Duck Islands, Grand Menan. Their eggs were never more than two in number, and appeared to be placed on the bare rock, without any preparation, even of pebbles, to keep them dry. They were placed under loose overlying rocks, the broken surfaces of which left room for the ingress and egress of the bird. They were usually where they could not be reached by the arm, and could only be secured with the aid of a short pole with a forked end. The birds were shy, and not infrequently betrayed the locality of their nests by flying from under the rocks at our approach; which, had they not done, they might have escaped observation. The eggs were all fresh; and it is possible that a little later more than two might have been found in a nest.

In the spring of 1836, in the months of April and May, this bird was still present off Nahant, and specimens were procured, one of which is referred to by Audubon. They were obtained without difficulty from an open boat; for, though the birds are expert divers, they would always rise within a short distance of the place where they disappeared, and could be shot before they had time to dive a second time.

Giraud does not include this species among the birds of Long Island; but Mr. Lawrence gives it as found in the neighborhood of New York. It is quite common in the outer waters of Massachusetts Bay as far as Provincetown. South of the Cape it is said to be much less common.

Audubon states that this species always lays three eggs; but I think that he must be mistaken — at least I never met with more than two eggs under one bird; and this I was universally assured was the prevailing number. Dr. Bryant, in his paper on the Birds that breed in the Gulf of St. Lawrence, where he found it breeding everywhere in abundance, also states that he never found more than two eggs laid by the same bird. This was noticed on a small island where there was nothing indicating that the bird had been disturbed, where the greater number had but just begun to incubate, and none of the eggs had been hatched.

Four eggs, selected by Dr. Bryant as characteristic of their general size and shape, measure 2.24 by 1.42 inches; 2.16 by 1.50; 2.01 by 1.46; 2.28 by 1.51.

The Smithsonian Institution has eggs of this species from the Bay of Fundy, Gulf of St. Lawrence, and Newfoundland. In some the ground-color is a glaucous-white; in others a deep buff; the markings are of a rich brown intensified into blackness. Their average size is 2.30 by 1.85 inches.

Cepphus columba.

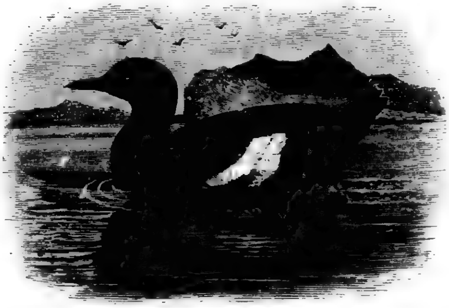
THE PIGEON GUILLEMOT.

Uria grylle, β, LATH. Ind. Orn. II. 1790, 797.

Cepphus columba, PALL. Zoog. Rosso-As. II. 1826, 348 (part).

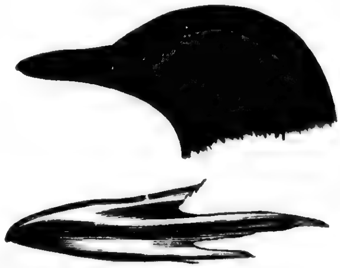
Uria columba, KEYS. & BLAS. Wirb. Eur. 1840, p. xcii. — CASS. U. S. Expl. Exp. Orn. 1858, 346, pl. 38, fig. 1; in Baird's B. N. Am. 1858, 912; ed. 1860, pl. 96, fig. 1. — BAIRD, Cat. N. Am. B. 1859, no. 727. — COUES, Key, 1872, 345; Check List, 1873, no. 632; 2d ed. 1882, no. 872. — RIDGW. Nom. N. Am. B. 1881, no. 761.

HAB. Coasts and islands of the North Pacific, from Southern California (breeding) to Aleutian Islands, and across to Kamtschatka; thence southward to Northern Japan. Wholly replaced north of Behring's Straits by *C. Mandtii*.

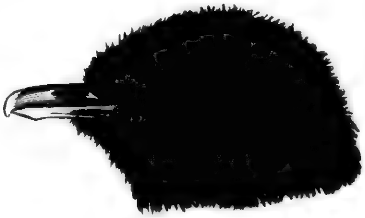


C. columba, summer dress.

SP. CHAR. Similar to *C. grylle*, but the bill stouter and more obtuse at the tip, the under surface of the wings without any distinct white, and with the white patch on outer surface of the wings divided for the lower half by a black V-shaped bar. *Adult, in summer:* Uniform sooty slate-black, slightly glossed with "invisible" green; wing with two white patches, one covering



Summer adult.



Downy young.

the middle and posterior lesser coverts, the other, the end of the greater coverts; the latter patch completely separated from the other for the lower half, being very narrow near the outer edge of the wing, but gradually widening above (where overlain by the ends of the middle coverts), so as to blend the two white patches; under wing-coverts pale smoky grayish. Bill black; mouth, legs, and feet bright red in life; claws black; iris dark brown. *Winter plumage:* Similar to the same stage of *C. grylle*, but the white wing-patch divided, as above. *Young:* Distinguishable from the corresponding stage of *C. grylle* by the absence of white on the under surface of the wing; otherwise very similar. *Downy young:* Scarcely distinguishable from that of *C. grylle*.

Total length, about 13.00 inches; extent, 23.00; wing, 6.90–7.30 (average about 7.00); culmen, 1.20–1.40; gonys, .55–.60; depth of bill through middle of nostril, .40–.42; tarsus, 1.35–1.50; middle toe, without claw, 1.45–1.55. (Six summer adults.)

This species, closely resembling the *Cepphus grylle*, though differing slightly in size and in certain specific markings, replaces that species on the Pacific coast of North America, and on the eastern coast of Asia also. It is quite common in the neighborhood of Sitka, where Bischoff obtained twenty specimens. It was found abundant at Kadiak, where its eggs were also procured. Mr. Dall did not meet with it about Unalashka, but it was very common at the Shumagins. He speaks of it as being a very expert diver, very quick in its motions, and very hard to kill. Its eggs were obtained June 24, 1872, at Popoff Island, one of the Shumagins; they were two in number. The nest was in a burrow or hole under rocks near the water's edge.

Several birds of this species were caught alive on their nests at Coal Harbor, Unga. The young in down were also obtained there July 16, 1872. All the eggs were more or less developed. It is presumed to be a summer visitor, yet, like the *C. grylle*, it may be to some extent a resident wherever found. In the Aleutian Islands, west of Unalashka, Mr. Dall noticed it as being abundant everywhere from Attu to the Shumagins; but it was not seen in winter. It is named by Mr. R. Browne as one of the birds of Vancouver Island.

Dr. Cooper speaks of this species as being a handsome bird, and as one abundant north of California; but he did not meet with it in summer south of Santa Barbara and San Nicolas Island, where he saw it, but not in large numbers. It is more common about the Farallones, and breeds there, laying its eggs in slight burrows which are hollowed out among the rocks. The eggs are white, blotched with dark and light brown, chiefly in a ring about the larger end, and measure in length 2.50 inches, in breadth 1.66.

About the shores of Puget Sound however — as Dr. Cooper states — this species burrows two or three feet deep in the softer banks, making an entrance where the cliff is steep and overhangs the water, and at a distance of a few feet below the top, the burrow winding so as to be difficult to follow. From this habit the bird has the local name of the Bank Duck. On the water it swims and dives with so much skill as to make its capture difficult. If swiftly pursued, it sometimes utters a shrill but not loud whistling cry, not unlike that of the Western Oyster-catcher. Its flight is strong and rapid, not unlike that of a Pigeon; but this is the only point in which it resembles the bird from which it derives its name. It can walk quite easily on the land, and resorts there to rest. When thus perched on the rock, Dr. Cooper has heard it utter a low, rather musical song, which he at first mistook for that of some sparrow. It is, therefore, like *Ptycoramphus aleuticus*, a kind of aquatic song-bird. At Santa Cruz Dr. Cooper found pairs of this species in June on various points of the beach where there are high bluffs of sandstone soft enough for them to burrow in; and he has no doubt that a few breed as far south as this, if not as far as the southern islands, of which San Nicolas is the only one suited for this purpose.

Mr. Henshaw is also of the opinion that the Santa Barbara Islands are the southern limit of this species during the breeding-season. Among these islands it is quite numerous, breeding in the caves and hollows of the generally inaccessible cliffs. Noticing, early one morning, many of these birds, frightened by the report of his gun, issuing out of a ravine hemmed in by high rocky cliffs and terminating in a low, narrow cave, Mr. Henshaw gained access to the latter, and succeeded in finding their eggs. No nest at all had been prepared for these, but they had been deposited on the sandy floor of the cavern, and at its farther end, where it was so dark that he could not see them without the aid of a light. Other pairs had availed themselves of the nooks and fissures in the face of the wall, laying their two eggs on the bare rock. He was able to find but a few of the many eggs that must have been there, as the shelves of the rocks were in most instances too high to be reached. The birds submitted to this pillage without a murmur, though not without solicitude, as was evinced by the anxious manner in which they swam back and forth at the entrance to the ravine, keeping well out of gunshot. He describes their eggs, when fresh, as having a faint greenish white ground, spotted, mostly at the larger end, with irregular blotches.

Eggs of this species are in the Smithsonian collection from Coal Harbor, Alaska, Puget Sound, Kadiak, and the Farallones. The ground-color varies from a glaucous white to a deep buff. The markings are a deep warm tint of claret-brown, deepening into blackness, in bold, large blotches intermingled with smaller, subdued cloudings of a faint lavender and purplish slate. Two eggs in my own collection, from the Farallones, measure: 2.30 by 1.70 inches; 2.45 by 1.65.

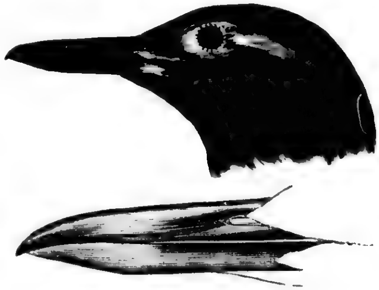
Cepphus carbo.

THE SOOTY GUILLEMOT.

Cepphus carbo, Pall. Zoogr. Rosso-As. II. 1826, 350. — Newt. Ibis, 1865, 519.

Uria carbo, Brandt, Bull. Sci. II. 1837, 346. — Cass. Pr. Philad. Acad. 1862, 323; in Baird's B. N. Am. 1858, 913; ed. 1860, pl. xcvii. — Baird, Cat. N. Am. B. 1859, no. 728. — Coues, Key, 1872, 345; Check List, 1873, no. 633; 2d ed. 1882, no. 873. — Ridgw. Nom. N. Am. B. 1881, no. 762.

Hab. Shores of the Okotsk Sea, Kurile Islands, and Northern Japan; Behring's Island (accidental? Stejneger); ?? Unalashka (Pallas).



Sp. Char. A little larger and more robust than *C. columba*. Bill black, very robust, in thickness and length superior to that of that species, rather obtuse, very straight, with the back rounded and convex. Nasal fossæ as in *C. columba;* linear nostrils longer. Small feathers at the frontal angle as far as the nostril and around the base of the lower mandible are white. Orbital region white, broader below the eyes and posteriorly drawn out into a thin point. Body entirely brownish black, the shoulders more grayish, but no white wing-spot. Feet intense red, also the webs, more robust than in *C. columba;* claws black, stronger, shorter, less pointed.

Comparative proportions.	*C. columbæ.*	*C. carbonis.*
Length of the bill to the frontal angle,	1″ 2‴	1″ 5‴
Length of the bill to the rictus,	1 4	1 8

Comparative proportions.	*C. columbæ.*	*C. carbonis.*
Length of the bill to the nostrils,	0″ 11‴	1″ 1⅓‴
Length of wing,	6 7	7 6
Length of tarsus,	1 3	1 4
Length of middle toe, with claw,	1 9	1 11
Length of the claw,	0 5	0 4⅕
Length of the rectrices,	2 0	2 0

(PALLAS, l. c., translation.)

According to Von Schrenck ("Reis. Amurl." I. 1860, p. 497), there is some variation in the amount of the white on the head, especially around the base of the bill, where in some specimens there is scarcely any trace whatever of this color. The single example in the National Museum collection (a head from Japan, collected by Dr. W. Stimpson) agrees exactly with Pallas's description, as above, in having the feathers all round the base of the bill distinctly white. The measurements of this specimen are as follows: Culmen, 1.70; commissure, 2.10; gonys, .80; side of mandible to malar apex, 1.55; depth at base, .50; width, .38. This head is of a dull grayish-fuliginous, darker on the pileum and lower part of neck, and becoming dull white at the base of the bill all round), as well as around the eyes, and thence backward, as an ill-defined streak, along the upper edge of the auriculars. The under side of the head, as well as the greater extent of the lateral portions, is dull smoky grayish, this color fading rather gradually into the white, which is abruptly defined only above the eyes, where the dusky color of the crown forms a marked contrast.

I can find no mention of the living presence of this species either on any portion of the American coast or in the Aleutian Islands; nor is there any evidence that it has a claim to be retained in the avi-fauna of North America. Its habits — in regard to which I have no notes — are probably nearly identical with those of *C. grylle* and *C. columba*. This bird is not uncommon in the summer in Yezo, Japan (Swinhoe, "Ibis," 1875).

Cepphus Motzfeldi.

MOTZFELD'S GUILLEMOT.

Uria Motzfeldi, BENICKEN, Isis, Aug. 1824, 889.
Cepphus Motzfeldi, STEJN. Pr. U. S. Nat. Mus. 1884.
Uria unicolor, FABER, Isis, Sept. 1824, 981. — BREHM, Isis, 1826, 988; Handb. Vög. Deutschl. 1831, 985. — SCHLEG. Rev. Crit. 1844, 106. — BP. Compt. Rend. XLII. 1856, 774; Cat. Parzud. 1856, 12.
Grylle carbo, BP. Cat. Met. Ucc. Eur. 1842, 82 (not of PALL. 1826).
"*Uria carbo* (Brit. Mus. ex Iceland)," NEWT. Ibis, 1865, 518 (part).
Alca grylle, SCHLEG. Mus. P.-B. Urinat. 1867, 20 (part).
Uria grylle, KUML. Bull. U. S. Nat. Mus. No. 15, p. 104 (part).

HAB. High North Atlantic (west shores of Cumberland Sound, Greenland, and Iceland).

SP. CHAR. Similar to *C. carbo*, but without any white or light grayish about the head. *Adult:* Entire plumage uniform sooty black or dark sooty brown, the abdomen somewhat more grayish. "Bill black, very compressed, with very prominent gonydeal protuberance, bent tip, and feathered as far as above the nostrils" (BENICKEN, *l. c.*, translation). Total length, 16 inches 9 lines (Hamburg measure); culmen, 1 inch 9 lines; bill from angle of mouth, 2 inches 3 lines; from nostril, 1 inch; tarsus, 1 inch 6 lines. Feet yellowish brown (in dried skin), the webs whitish.

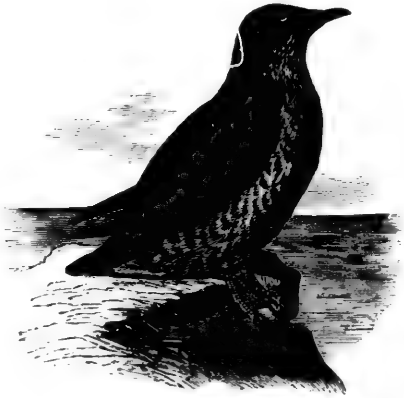
This bird, which evidently is a distinct, but little known, species, was first described by Benicken from a specimen received by him in 1820 from Greenland. A month afterward the same specimen was re-described by Faber as *Uria unicolor*, under the supposition that it had not yet received a name. To his description he adds the information that the owner of the bird-rookery on Draugœ, Iceland, had occasionally observed a pair of uniformly dusky Guillemots breeding on the rocks at that place. A specimen similar to Benicken's type was received at the Leyden Museum from Greenland, and is mentioned by Schlegel in his "Revue critique," as cited above. A third specimen, in the British Museum, is recorded by Professor Newton in "The Ibis" for 1865, p. 518 — said to have come from Iceland; and in the "Arctic Manual" (1875), p. 109, he remarks that Holböll says that he has seen in Greenland an "entirely black example," which is probably the same species. The latest testimony that we have is that of Mr. L. Kumlien, who accompanied the Howgate Polar Expedition in 1877–1878, and who saw "three entirely black specimens," which were considered to be *C. carbo.* "One was procured in Cumberland, but was lost."

It will thus be seen that we have abundant and incontrovertible evidence of the existence in the higher latitudes of the North Atlantic of a uniformly black or dusky Guillemot. Some authors have referred it to *C. carbo*, but it is evidently distinct from that species, which seems to be strictly confined to the Asiatic coast of the North Pacific. Others have considered it a melanism of *C. grylle;* but the larger size and very different proportions preclude the likelihood of such relationship. Upon the whole, there can be little doubt that it is a distinct species, probably most nearly related to *C. carbo*, and representing the latter in the North Atlantic. At any rate, it should be kept in mind by those who have the opportunity of investigating the avian fauna of the northern waters of the Atlantic.[1]

GENUS **BRACHYRAMPHUS**, BRANDT.

Brachyramphus, BRANDT, Bull. Ac. St. Petersb. II. 1837 (type, *Colymbus marmoratus*, GMEL.).
Apobapton, BRANDT, l. c. (same type).

CHAR. Size small (wing less than 5.50 inches). Bill small and slender, much shorter than the head (not longer than the short tarsus), compressed, and acute; culmen gently curved, gonys nearly straight; mandibular tomium notched near the tip, and greatly inflected toward the base; nasal fossæ small, shallow, mostly filled with feathers, which nearly conceal the very small nostrils; head without ornamental plumes.



B. marmoratus, summer dress.

The exact number of species composing this genus is a matter of some doubt. The following key includes those whose validity is established, and also another (*B. brevirostris*), which, if not identical with *B. Kittlitzi*, must also be a well-marked species.

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[1] A much more detailed history of this bird, by Dr. L. Stejneger, in an article entitled Remarks on the Species of the Genus *Cepphus*, will soon be published in the Proceedings of the United States National Museum. We have been kindly permitted by Dr. Stejneger to compile the information given in the present article from his manuscript.

A. Tarsus much shorter than the middle toe without its claw.

1. **B. marmoratus.** Wing, 5.00 inches; culmen, .60–.70; depth of bill at anterior end of nostril, .24; width at same point, .15; tarsus, .70; middle toe, .92–1.00. *Summer plumage:* Dusky above, barred with rusty; below, mixed white and fuliginous. *Winter plumage:* Above, dusky, interrupted by a white nuchal collar; feathers of back, etc., tipped with plumbeous. Entire lower parts white. *Hab.* Pacific coast, south to Santa Cruz, Cal.

2. **B. Kittlitzi.** Wing, 5.10–5.80 inches; culmen, .40–.45; depth of bill at anterior end of nostril, .20–.22; width at same point, .15; tarsus, .60–.65; middle toe, .85–.95. *Summer plumage:* Above, plumbeous, with indistinct narrow bars of black and very irregular (mostly longitudinal) spots of creamy buff; lower parts chiefly white, the jugulum and entire sides strongly overlaid by creamy buff, and heavily, but irregularly, barred and spotted with blackish; other lower parts (except anal region and crissum) more faintly marked with bars (mostly crescentic) of grayish dusky. *Winter plumage:* Above, plumbeous, the back and rump indistinctly and narrowly barred with white; entire side of head (including whole of lores and superciliary region), narrow but distinct nuchal collar, and entire lower parts immaculate pure white; sides of breast crossed by a broad band of grayish slate, narrowing toward middle of jugulum. Bill black; iris brown; feet light brown in dried skin (livid purplish gray in life?). *Hab.* From Northern Japan and Kamtschatka to Unalashka.

[3? **B. brevirostris.**[1] Wing, 5.25 inches; culmen, .50; tarsus, .50. *Adult, summer plumage:* Above, grayish brown, the head and back spotted with white; below, white, waved and spotted with brown; bill black; feet yellow, the webs and claws brown. *Hab.* San Blas, W. Mexico.]

B. Tarsus equal to the middle toe, without claw.

4. **B. hypoleucus.** Wing, 4.50–5.25; culmen, .70–.80; tarsus, .90–.95; middle toe, .85. Lining of wings white; above, plain dark slaty; below, wholly pure white. *Hab.* San Diego to Cape St. Lucas.

5. **B. Craverii.** Wing, 4.60; culmen, .78–.80; tarsus, .88–.90; middle toe, .80–.88. Lining of wings smoky gray or slaty. Otherwise similar to *B. hypoleucus.* *Hab.* Lower California.

Brachyramphus marmoratus.

THE MARBLED GUILLEMOT.

Colymbus marmoratus, Gmel. S. N. I. ii. 1788, 583, no. 12.

Brachyramphus (Apobapton) marmoratus, Brandt, Bull. Ac. St. Petersb. II. 1837, 346.

Brachyrhamphus marmoratus, Gray, Gen. B. III. 1849, 644. — Cass. in Baird's B. N. Am. 1858, 915. — Baird, Cat. N. Am. B. 1859, no. 732. — Coues, Pr. Ac. Nat. Sci. Philad. 1868, 61; Key, 1872, 344; Check List, 1873, no. 629; ed. 2, 1882, no. 866. — Ridgw. Nom. N. Am. B. 1881, no. 755.

Cepphus perdix, Pall. Zoog. Rosso-As. II. 1826, 351, pl. 80.

Brachyramphus Wrangeli, Brandt, Bull. Ac. St. Petersb. II. 1837, 344. — Cass. in Baird's B. N. Am. 1858, 917. — Baird, Cat. N. Am. B. 1859, no. 733. — Coues, Pr. Ac. Nat. Sci. Philad. 1868, 63.

Uria Townsendii, Aud. Orn. Biog. V. 1839, 251, pl. 430; B. Am. oct. ed. VII. 1844, pl. 475.

Hab. Coasts and islands of the North Pacific, south, on the American side, to San Diego, Cal.; breeds at least as far south as Vancouver's Island.

Sp. Char. *Adult, full breeding-plumage:* Above, dusky, the back, scapulars, rump, and upper tail-coverts barred with rusty, the tips of the feathers being of this color. Lower parts fuliginous, more or less mixed with white, the underlying portion of the feathers being of the latter color; the lower parts never uniform fuliginous, but usually with this color largely predominating.

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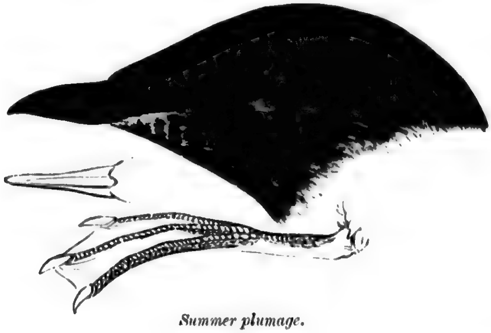
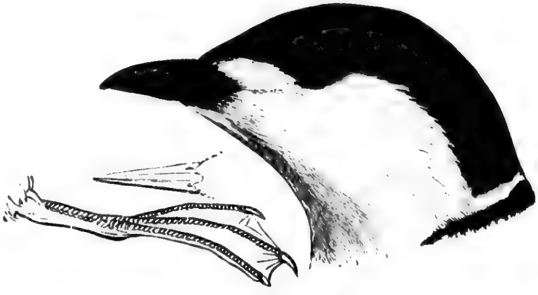
[1] Brachyrhamphus brevirostris. — Short-billed Guillemot.
Uria brevirostris, Vig. Zool. Jour. IV. 1828, 357; Zool. Beechey's Voy. 1839, Orn. p. 32 (San Blas). (This is possibly the same as *B. Kittlitzi.*)

Lining of the wing deep smoky gray. Bill uniform black, the extreme tip a little paler; iris dark brown; legs and feet pale colored in the dried skin (flesh-color in life [1]), the webs and claws dusky. *Midsummer plumage:* Similar to the above, but more uniformly dusky, the rusty bars of the rump, etc., wanting, owing to abrasion of the tips of the feathers. *Winter plumage* (= *B. Wrangeli*,



Summer plumage.

Brandt): Above, dusky, interrupted by a narrow white band across the upper part of the nape; interscapulars, feathers of the rump, and upper tail-coverts tipped with plumbeous; scapulars chiefly white, especially the inner ones, forming a conspicuous longitudinal patch on each side of the back. Entire lower parts, including the lower half of the lores and the whole side of the head, except the orbital region, pure white, the exterior feathers of the sides and flanks striped with



Winter plumage.

plumbeous or dusky grayish. Lining of the wing smoky gray, as in the summer plumage. *Young, first plumage:* Above, uniform blackish (without plumbeous tips to any of the feathers), the occipital band of the winter plumage slightly indicated or interrupted; scapular patch less distinct than in the winter plumage. Lores almost wholly dusky. Lower parts white nearly everywhere, but more especially on the jugulum, breast, and sides, transversely mottled with fuliginous-dusky. Bill much smaller and weaker than in the adult.

Total length, about 9.50 to 10.00 inches; extent, 18.00; wing, 5.00; culmen, .60–.70; tarsus, .70; middle toe, without claw, .90–1.00.

This also is an oceanic and a Pacific species, occurring from the coast of California northward. To what extent this bird is to be found on the opposite coasts of Asia, or if at all, has not been satisfactorily ascertained. According to the observations of Mr. R. Browne, it occurs on the western sea-coast of Vancouver Island. Dr. Cooper, in his Report on the Birds of Washington Territory, mentions finding it common in winter about the mouth of the Columbia River, and was induced to express the belief that it does not occur farther south — which opinion he was afterward led to modify, having met with a number of these birds in the open water off Monterey in May, 1862. Their presence there at that season indicated the probability that they might be breeding in that neighborhood. He had previously to this obtained on the coast, at the mouth of the Columbia, two specimens that had been killed by the storms; and he had observed, on his way down the coast, birds which he supposed to be of this species, flying from under the steamer. He could obtain no information as to their habits or place of summer residence. The dead specimen found on the beach at Santa Cruz in January was taken at the most southern point where, so far as he knew, this species had been noticed.

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[1] According to Audubon (l. c.) the feet are yellow.

Under the name of *B. Wrangeli* Mr. Dall mentions the procuring of several specimens of this bird by Bischoff at Sitka; where also many others in the normal plumage were taken. And again referring to this species under that name, Mr. Dall mentions it as being quite common in the Aleutian Islands east of Unalashka. He did not meet with any at the Shumagins, but thinks that it probably abounds there. He does not refer to it in his Notes on the Birds of the Western Aleutian Islands.

Brachyramphus Kittlitzii.

KITTLITZ'S GUILLEMOT.

Brachyramphus Kittlitzii, BRANDT, Bull. Ac. St. Petersb. II. 1837, 346 (young). — CASS. in Baird's B. N. Am. 1858, 917. — BAIRD, Cat. N. Am. B. 1859, no. 735. — COUES, Key, 1872, 344; Check List, 1873, no. 630; ed. 2, 1882, no. 867. — RIDGW. Nom. N. Am. B. 1881, no. 756.

"*Uria antiqua*" (supposed young), AUD. B. Am. VII. 1844, 263, pl. 470, fig. 2.

?? *Uria brevirostris*, VIG. Zool. Journ. IV. 1828, 357 ("San Blas"); Zool. Beechey's Voy. 1839, Orn. p. 32.

?? *Brachyrhamphus brevirostris*, AUCT. (See foot-note on p. 499.)

HAB. Kamtschatka and Aleutian Islands, east to Unalashka, Point Ebolin, and Nushagak Bay.

SP. CHAR. *Adult, breeding-plumage:* Above, glossy plumbeous-black, everywhere, except on the wings and tail, thickly spotted with creamy buff, the spots generally having a longitudinal tendency; wings dusky slate, the middle and greater coverts narrowly bordered with ashy, the inner webs of the secondaries tipped with white; tail slate-color, the tips of all the feathers, and the inner webs of all except the intermediæ, white. Sides of the head and neck, jugulum, sides, and flanks, creamy buff, thickly spotted transversely, except on the head and neck, with dusky, the spots on the jugulum partaking more or less of the form of lunulate bars; other lower parts white with scattered and less distinct lunulate bars of dusky, the crissum and anal region immaculate. Lining of the wing uniform smoky slate, rather darker than in *B. marmoratus.* Bill uniform black; legs and feet light brownish in the skin, the webs and claws blackish. *Adult, winter plumage:* Pileum, crescentic bar immediately in front of eye, a broad bar extending across the sides of the jugulum (nearly meeting anteriorly), with upper parts generally, plumbeous-slate with a silky gloss; the feathers of the back and rump narrowly tipped with white, many of them showing a darker shade beneath the surface; scapulars mostly white, with plumbeous prevailing on the outer webs; wings much darker than the back, the greater coverts and secondaries distinctly, the remiges and primary coverts very indistinctly, bordered with pale grayish. Lining of the wing and axillars uniform slate-gray. Entire lower parts, and all of the head and neck except as described, including a collar around the nape, immaculate pure white. Bill uniform black; feet brownish (in the skin), the webs darker.

Wing, 5.10–5.80 inches; culmen, .35–.45; depth of bill near base (at anterior end of nostril), 20–.22, width at same point, .15; tarsus, .60–.65; middle toe, .85–.95.

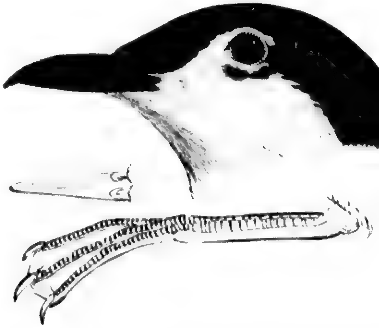
Brachyramphus hypoleucus.

XANTUS'S GUILLEMOT.

Brachyrhamphus hypoleucus, Xantus, Pr. Ac. Nat. Sci. Philad. Nov. 1859, 299 (Cape St. Lucas). — Coues, Ib. 1868, 64 ; 2d Check List, 1882, no. 868. — Ridgw. Nom. N. Am. B. 1881, no. 757.

Hab. Coast of Southern California, from San Diego to Cape St. Lucas.

Sp. Char. *Adult, summer (breeding?) plumage:* Above, uniform dark slaty, the feathers nearly black just beneath the surface, but pale grayish basally ; entire lower parts, including greater part of the lores, orbital region, except above the eye, and auriculars, continuous white. Lining of the wing pure white, the anterior and exterior lesser under coverts with concealed spots of grayish ; inner webs of primaries chiefly grayish white. Sides and flanks, beneath the wings, plumbeous-slate, some of the feathers tipped with white. Bill black, the mandible brownish basally ; iris "pale blue" (Xantus, MS.); legs and feet pale brownish gray in the dried skin. *Winter plumage:* Similar to the above, but nearly the whole of the lores and orbital-region plumbeous. Bill black, the base of the mandible whitish ; "feet whitish blue, black below" (Cooper, MS.).



Total length, 10.00 to 10.50 inches ; extent, 15.80 to 19.50 ; wing, 4.50–5.25 ; culmen, .70–.80 ; tarsus, .90–.95 ; middle toe, .85.

Brachyramphus Craverii.

CRAVERI'S GUILLEMOT.

Uria Craverii, Salvadori, Descriz. di altre Nuove Specie di Ucc. Mus. di Torino, 1867, 17 (Lower California).

Brachyrhamphus Craverii, Coues, Pr. Ac. Nat. Sci. Philad. 1868, 66 ; 2d Check List, 1882, no. 869. — Streets, Bull. U. S. Nat. Mus. no. 7, 1877, 32 (critical ; habits). — Ridgw. Nom. N. Am. B. 1881, no. 758.

Hab. Coast of the Gulf of California ; Island of Natividad, near the western coast of Lower California.

Sp. Char. *Adult, summer and winter:* Above, including the entire lores and orbital region, with upper part of the auriculars, blackish slate ; a longitudinal whitish space on each eyelid. Entire lower parts, except sides and flanks, continuous white ; sides and flanks uniform dull slate or sooty plumbeous. Lining of the wing smoky gray or slaty, the greater under coverts and the tips of some of the smaller coverts, white ; inner webs of primaries grayish white only toward the base. "Bill black ; iris dark brown ; feet green" (Xantus, MS.).[1]

Total length, about 10.25 inches ; extent, 16.00 ; wing, 4.60 ; culmen, .78–.80 ; tarsus, .88–.90 ; middle toe, .80–.88.

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[1] One specimen is marked as above ; on the label of another the color of the iris is recorded as "pale blue, nearly white."

There is apparently something not yet understood in the relationship between this bird and *B. hypoleucus*, and it would not be at all surprising if the two should prove to be different phases of one species. Dr. Coues ("Pr. Philad. Acad." 1868, p. 65) suggests the possibility of *Craverii* being the young of *hypoleucus*; but Dr. T. H. Streets ("Bull. U. S. Nat. Mus." No. 7, 1877, pp. 32, 33) proves this not to be the case, and substitutes the theory of the latter being the *winter*, the former the *summer*, plumage of the same species. His remarks are as follows: "Dr. Coues alludes to the 'bare possibility' that *Craverii* was the young of *hypoleucus* — a supposition disproved by finding it breeding. *B. Craverii* can only be referred to *hypoleucus* now upon the assumption that the latter is the winter plumage of the former, as all specimens which have come to hand thus far with pure white lining of the wings were taken in winter, as far as known. Such an assumption would not be widely at variance with the known characters of the seasonal changes of plumage in some members of this family, but remains to be proven. Pending this determination, *Craverii* should be recognized as a good species."

To the above we have to say that although no date is given on the label of the type specimen of *B. hypoleucus*, it is apparently a midsummer bird, the plumage being exceedingly worn or weather-beaten, which would hardly be the case had it been killed in winter.

GENUS **SYNTHLIBORAMPHUS**, BRANDT.

Synthliboramphus, BRANDT, Bull. Ac. St. Petersb. II. 1837, 347 (type, *Alca antiqua*, GMEL.).

CHAR. Size rather small (wing about 5.50 inches). Bill much shorter than the head, very compressed, but the culmen comparatively broad; culmen regularly convex; gonys lengthened (more than half as long as the culmen), nearly straight; nasal fossæ very small, the oval nostrils situated near their centre; color chiefly plumbeous above and white beneath, the head and neck pied black and white.

COM. CHAR. Above plumbeous, beneath white. *Summer plumage:* Chin and part or whole of the throat dusky; top of the head with a broad white stripe on each side; entire sides, from neck to flanks, sooty blackish. *Winter plumage:* Similar, but whole throat white, the chin plumbeous; white stripes on top of head absent; sides and flanks white, striped with slaty.

Of this genus two species are known, distinguished as follows:

1. **S. antiquus**. Never crested. *Summer plumage:* Chin and whole throat sooty black, with a convex lower outline. *Winter plumage:* Auricular region crossed by a horizontal broad bar of dusky.
2. **S. wumizusume**. Crested in the breeding-season. *Summer plumage:* Forehead with a loose crest of several narrow, much elongated, nearly straight feathers, extending back toward the occiput; lores, orbital region, cheeks, chin, and upper half of the throat, velvety plumbeous, with a truncated lower outline. *Winter plumage:* Auricular region entirely white.

Synthliboramphus antiquus.

THE BLACK-THROATED GUILLEMOT.

Alca antiqua, GMEL. S. N. I. ii. 1788, 554, no. 11.

Uria antiqua, TEMM. & SCHLEG. Fauna Jap. 1845, pl. 80. — AUD. Orn. Biog. V. 1839, 100, pl. 402, fig. 12; B. Am. VII. 1844, 263, pl. 470, fig. 1 (but not fig. 2, which = *Brachyramphus Kittlitzi*, summer plumage).

Brachyramphus antiquus, GRAY, Gen. B. III. 1849, 644. — CASS. in Baird's B. N. Am. 1858, 916. — BAIRD, Cat. N. Am. B. 1859, no. 736.

Brachyramphus (Synthliboramphus) antiquus, BRANDT, Bull. Ac. St. Petersb. II. 1837, 347.

Synthliborhamphus antiquus, COUES, Pr. Ac. Nat. Sci. Philad. 1868, 56; Key, 1872, 344; Check List, 1873, no. 627; 2d ed. 1882, no. 864. — BRANDT, Mel. Biol. VII. 1869, 217. — RIDGW. Nom. N. Am. B. 1881, no. 753.

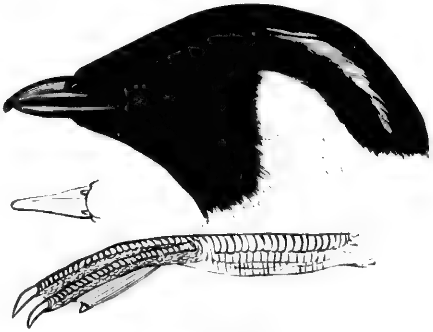
Uria senicula, PALL. Zoog. Rosso-As. II. 1826, 369, pl. 85.

Mergulus cirrhocephalus, VIG. Zool. Voy. Blossom, 1839, Birds, p. 32.

Brachyramphus brachypterus, BRANDT, Bull. Ac. St.-Petersb. II. 1837, 346 (quotes "*Uria brachyptera*, KITTLITZ, MSS."). — GRAY, Gen. B. III. 1849, 644. — CASS. in Baird's B. N. Am. 1858, 917. — BAIRD, Cat. N. Am. B. 1859, no. 734. — COUES, Pr. Philad. Acad. 1868, 66; 2d Check List, 1882, no. 870. — RIDGW. Nom. N. Am. B. 1881, no. 759.

HAB. Coasts and islands of the North Pacific, from Japan to Kamtschatka, across the Aleutian chain, and south to Sitka.

SP. CHAR. *Adult, breeding-plumage:* Head and neck chiefly black, duller and more fuliginous anteriorly and on the throat; on each side of the occiput, from above the middle of the eyes to the nape, a series of white streaks, blended so as to form a broad stripe, those of opposite sides sometimes meeting across the lower part of the occiput; black of the throat separated from that of the nape by a broad intervening space of white, which extends upward on each side of the neck to the auricular region. Lower parts continuous white, the sides and flanks, beneath the wings, sooty black. Upper parts uniform plumbeous, the anterior lesser coverts and the remiges darker; sides of the upper back, between the deep black of the nape and the dull black on the sides of the breast, black, marked with numerous broad white streaks. Bill yellowish, the basal half blackish; iris brown; legs and feet dull yellowish (in the skin), the webs dusky. *Winter plumage:* Similar to the above, but whole throat white (the chin, sometimes upper throat also, plumbeous), the broad white latero-occipital stripes and the streaks on the upper back absent; the sides and flanks white, the outermost feathers striped with slaty.



Summer plumage.

Total length, about 9.50–10.50 inches; extent, 16.75–18.25; wing, 5.25–5.50; culmen, .60; tarsus, .95–1.00; middle toe, without claw, 1.00–1.05.

The Black-throated Guillemot is another of the strikingly peculiar forms of deep-sea-going birds found exclusively in the Pacific Ocean, visiting the islands and the coasts of both the American and the Asiatic mainland. They occur with some irregularity in their distribution, and being probably, like most of their family, of nocturnal habits, we know but little of their specific peculiarities of manner. They are found as far south as Japan, and as far north as Sitka and the Island of Amak.

Several specimens were taken by Mr. H. Whitely in Hakodadi Harbor, Japan, in May. Most of them had lost either their right or their left foot; these had been apparently bitten off some time previously, as the place was healed and the skin grown over it. Mr. Blakiston speaks of it as common in the game market of Yokohama in winter, and Swinhoe found it common in Yezo from October to May.

Mr. Dall states that this species, called by the Russians "Starik," is common at St. George's, and also at Amak Island, north of the peninsula of Aliaska. Specimens were also obtained at Sitka by Bischoff.

In his Notes on the Avifauna of the Aleutian Islands, lying east of Unalashka, Mr. Dall states that this species was obtained breeding, with the eggs, at the Chica Islets, Akutau Pass, near Unalashka, June 2, 1872. They were caught sitting on their nests, which are in holes in the bank, similar to those of the Petrels — *Oceanodroma furcata*. There were two eggs in each nest, and in several cases the male bird was sitting on the eggs. He did not meet with this species in any other place, yet it may be abundant, notwithstanding.

Afterward, in his Notes on the Birds of the Islands west of Unalashka, Mr. Dall speaks of finding it abundant throughout the islands, especially in certain localities. He obtained it from Kyska eastward. While it congregates off shore in very great numbers, it also frequents the bays and harbors much more than any of the other small Auks. The iris of this bird is white.

Among other specimens of the young form, Mr. Dall obtained one at Amchitka with a malformation of the lower mandible, which was nearly one half shorter than the upper one. The bird was fat and healthy.

Specimens of the eggs of this species are in the Smithsonian collection, obtained from Chico Island, Sitka, and Aliaska. Their ground-color is a pale buff; over this are very generally and equally distributed small longitudinal markings, somewhat subdued, of lavender-gray and a light brown. Four eggs measure as follows: 2.15 by 1.45 inches; 2.35 by 1.55; 2.45 by 1.55; 2.50 by 1.40.

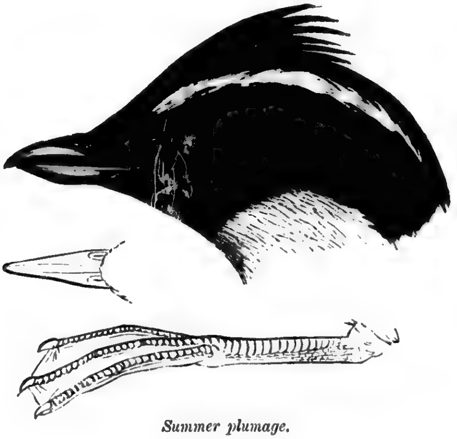
Synthliboramphus wumizusume.

TEMMINCK'S GUILLEMOT.

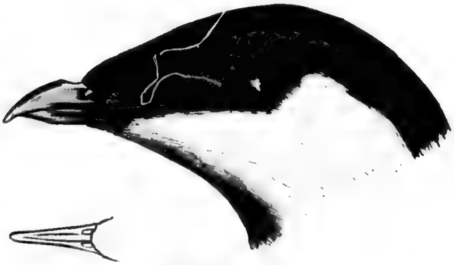
Uria wumizusume, TEMM. Pl. Col. 579 (1838). — TEMM. & SCHLEG. Fauna Jap. 1845, pl. 79.
Anobapton (Synthliboramphus) wumizusume, BONAP. Compt. Rend. XLII. 1856, 774.
Synthliborhamphus wurmizusume, COUES, Pr. Ac. Nat. Sci. Philad. 1868, 58; Key, 1872, 344; Check List, 1873, no. 628. — RIDGW. Nom. N. Am. B. 1881, no. 754.
Synthliborhamphus umizusume, COUES, 2d Check List, 1882, no. 865.
Synthliboramphus Temminckii, BRANDT, Bull. Ac. St. Petersb. II. 1837, 347.
Brachyramphus Temminckii, CASS. in Baird's B. N. Am. 1858, 916. — BAIRD, Cat. N. Am. B. 1859, no. 737.

HAB. Coasts and islands of the North Pacific, from Washington Territory to Japan.

SP. CHAR. *Adult, breeding-plumage:* Forehead, centre of crown, nape, and sides of neck black, this color continued down the sides to the flanks; nape sometimes marked with scattered short white streaks; fore part of crown with a loose crest of slender, much elongated feathers, slightly curved, or nearly straight, and inclining backward toward the occiput; top of head with a broad white stripe, originating on each side of the crest and extending back to and including the occiput; loral, orbital, and malar regions, chin, and upper half of the throat, with orbital and auricular regions, uniform velvety plumbeous, with a truncated lower outline; remaining lower parts continuous white, except along the sides, which are sooty blackish. Upper parts, except as described, plumbeous, the anterior lesser wing-coverts, remiges, and tail dusky. Bill yellowish, the culmen black; iris blackish; legs and feet dusky yellowish (in the dried skin). *Winter plumage:* Similar to the above, but whole throat white, chin light plumbeous, crest and white stripes of the crown absent, and the sides and flanks white, striped with slate-gray. *Downy young:* Above, brownish gray, the whole back and rump indistinctly streaked with grayish white; lower parts entirely pure white, including chin and throat. Bill dusky, legs and feet pale brownish (in dried skins), the webs dusky.



Summer plumage.



Winter plumage.

Total length, about 10.50–11.00 inches; extent, 18.00–18.50; wing, 5.10–5.50; culmen, .70; tarsus, 1.00; middle toe, .90–1.00.

Temminck's Guillemot appears to have been first described, by the distinguished ornithologist whose name it bears, from a Japanese specimen. It has since been collected by Mr. W. Heine, in Commodore Perry's Expedition, at Simoda, and also in Yedo Bay. Dr. Cooper obtained specimens at Port Gamble, Washington Territory, and on Shoal-water Bay. In regard to its breeding-habits and its other specific peculiarities, we have no information. Dr. Suckley only states in regard to it that it is found in summer at Puget Sound; while Dr. Cooper presumes that it has about the same range as the *Brachyramphus marmoratus*, and so far as he has observed has similar habits. It is said to be common at Hakodadi in October.

GENUS **CICERONIA**, REICHENBACH.

Ciceronia, REICHENB. Syst. Avium, 1852, p. iii (type, *Phaleris microceros*, BRANDT, = *Uria pusilla*, PALL.).

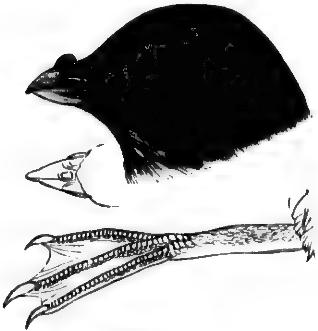
Ciceronia pusilla.

THE KNOB-BILLED AUK; LEAST AUK.

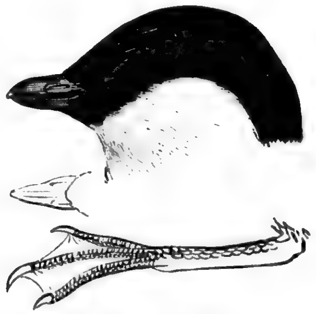
Uria pusilla, PALL. Zoog. Rosso-As. II. 1826, 373, pl. 70 (excl. syn.).
Phaleris pusilla, CASS. Pr. Ac. Nat. Sci. Philad. 1862, 324; in Baird's B. N. Am. 1858, 909. — BAIRD, Cat. N. Am. B. 1859, no. 723.
Simorhynchus pusillus, COUES, Pr. Ac. Nat. Sci. Philad. 1868, 48, fig. 12, figs. 227, 228; Key, 1872, 343; Check List, 1873, no. 624; ed. 2, 1882, no. 861; Elliott's Alaska, 1875, 208.
Ciceronia pusilla, RIDGW. Nom. N. Am. B. 1881, no. 750.
Phaleris corniculata, ESCHSCH. Zool. Atl. IV. 1831, 4, pl. 16 (=summer adult).
Phaleris microceros, BRANDT, Bull. Ac. St. Petersb. II. 1837, 346 (= summer adult). — CASS. in Baird's B. N. Am. 1858, 908. — BAIRD, Cat. N. Am. B. 1859, no. 722.
Simorhynchus microceros, COUES, Pr. Philad. Acad. 1868, 46, fig. 11.
Phaleris pygmæa, BRANDT, Bull. Ac. St. Petersb. II. 1837, 347 (not *Alca pygmæa*, GMEL. 1788).
Phaleris nodirostra, BONAP. Comp. List, 1838, 66 (=summer adult). — AUD. Orn. Biog. V. 1839, 101, pl. 402; B. Am. VII. 1844, pl. 468.

HAB. Coasts and islands of the North Pacific, south to Japan and Sitka, north to the Prybilof Group.

SP. CHAR. *Adult, breeding-plumage:* Bill very short, the depth and width through the base about equal to the length of the culmen, which is decidedly arched; gonys slightly convex; top of the cere furnished with a small semicircular compressed tubercle. Upper parts almost wholly deep slate-black, inclining to glossy black in some specimens; inner scapulars usually white, forming more or less of a longitudinal patch on each side of the back; inner greater coverts and secondaries also usually tipped with white. Forehead and lores more or less conspicuously ornamented with delicate acuminate white feathers, a few of which, narrower and more thread-like, extend backward in a narrow streak from the rictus across the cheeks, while a more conspicuous line of

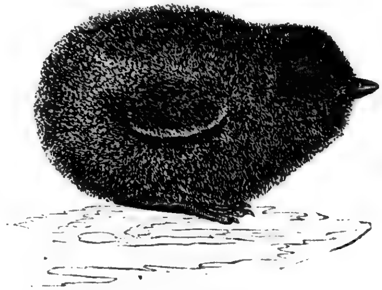


Summer adult.



Winter adult.

similar acicular feathers crosses the auricular region, from behind the lower eyelid. Lower parts chiefly white, the breast and sides more or less spotted with dark slate, this frequently forming a distinct and uninterrupted collar across the jugulum, usually in abrupt and marked contrast to the white of the throat; chin and malar region plumbeous, this usually fading gradually into the white below it. Bill dark reddish; iris white; legs and feet dusky in the dried skin. *Adult, in winter* (= *Uria pusilla*, Pallas): Bill smaller, more compressed, and destitute of the tubercle at the base of the culmen; lower parts, including the sides of the neck, continuously white, the chin plumbeous, as in the summer plumage; white ornamental feathers of the forehead, etc., usually less developed, or, in younger specimens, altogether wanting. *Young, first plumage:* Similar to the winter adult, but bill still smaller, no trace of the ornamental plumes about the head, and white scapular patches larger and more distinct. *Downy young:* Uniform sooty slate, paler and more grayish on the lower parts.


Downy young.

Wing, 3.50–4.00 inches; culmen, .35–.40; depth of bill (in summer adult), about .30, in winter adult and young, about .20; tarsus, .65; middle toe, .80.

A series of nearly seventy specimens obtained on the breeding-grounds in June and July on St. Paul's and St. George's Islands, Alaska, by Mr. H. W. Elliott, affords ample material for studying the individual variations of this species, which, as shown by this immense series, is very considerable. The principal variation consists in the degree to which the white of the lower parts is broken by dark spotting. In none is the white perfectly continuous, as in the winter plumage, although in a few it is very nearly so; there being in all more or less dark spotting across the jugulum and along the sides. The most highly plumaged specimens have a broad and uninterrupted collar of dark slaty across the jugulum, abruptly defined against the immaculate white of the throat, but below broken up into coarse spots, which continue along the entire sides, and often over the breast and abdomen also; in none, however, is there more than an approach to a segregation of the spots on the breast, and the lower parts are probably never uniformly dark, except the jugular collar. There is also much variation in the distinctness and extent of the white scapular areas, the majority of specimens having these well defined, while in some they are nearly obsolete. In one example (No. 62624), in which the upper parts are a particularly deep and glossy black, there is no trace of them; this specimen being also wholly destitute of the ornamental filaments of the head, and having the knob on the bill very slightly developed.

Mr. H. W. Elliott met with this species — the Least, or Knob-billed, Auk — on the Prybilof Islands. He speaks of it as the most characteristic of the waterfowl frequenting these islands, to which it repairs every summer by millions to breed with its allies, *Simorhynchus cristatellus* (Canooskie) and the *Cyclorrhynchus psittaculus.* It is said to be comically indifferent to the proximity of man, and can be approached almost within arm's length before taking flight, sitting upright, and eying one with an air of great wisdom combined with profound astonishment. Usually about the 1st or 4th of May every year the Choochkie — as this bird is called — makes its first appearance around the islands, for the season, in small flocks of a few hundreds or thousands, hovering over, and now and then alighting, upon the water, sporting, one with another, in apparent high glee, and making an incessant low chattering sound. By the 1st to the 6th of June they have arrived in great numbers, and then begin to lay. They frequent the loose stony reefs and bowlder-bars on St. Paul's, together with the cliffs on both islands, and an area of over five square miles of basaltic shingle on St. George's. On the last island they hover in the greatest number. There are millions of them. They make no nests, but lay a single egg each, far down below among loose rocks, or they deposit it deep within the crevices or chinks in the faces of the cliffs. Although, owing to their immense numbers, they seem to be in a state of great confusion, yet they pair off, under the rocks, upon the spot selected for incubation, making during this interesting period a singular grunting or croaking sound, more like a "devil's fiddle" than anything he ever heard outside of city limits. A walk over their breeding-grounds at this season is exceedingly interesting and amusing, as the noise of hundreds of these little birds directly under foot gives rise to an endless variation of sound as it comes up from the stony holes and caverns below, while the birds come and go, in and out, with bewildering rapidity, comically blinking and fluttering. The male birds, and many of the females, regularly leave the breeding-grounds in the morning, and go off to sea, where they feed on small water-shrimps and sea-fleas (*Amphipoda*), returning to their nests and sitting partners in the evening.

The Choochkie lays a single pure white egg, exceedingly variable in size and shape, usually oblong oval, with the smaller end somewhat pointed. Several specimens almost spherical were obtained, and others drawn out into an elongated ellipse; but the oblong-oval with the pointed smaller end is the prevailing type. The egg is very large, compared with the size and weight of the parent; average length, 1.55 inches; width, 1.12. The general aspect is much like that of a Pigeon's egg, excepting the roughness of the shell.

The chick is covered with a thick uniform dark grayish black down, which is speedily succeeded by feathers, all darker than those of the parent are six months later, at the time it takes its flight from the island for the year. The parents feed their young by disgorging, and when the young birds leave they are as large and heavy as the old ones. Mr. Elliott is strongly inclined to the opinion that the male bird feeds the female when incubating, but was not able to verify this supposition by observation, as the birds are always hidden from sight at that time.

Mr. Dall states that he obtained specimens of this bird from the peninsula of Aliaska, where it was abundant; from Plover Bay, in Eastern Siberia, where he collected it in person, and where the specimens were found to have the bill wider and deeper than usual; and also from St. George, one of the Prybilof Islands.

Eggs of this species from St. Paul's Island, Behring Sea — procured by Mr. H. W. Elliott — are of a pure chalky white color, one end more tapering than the other. They measure about 1.63 inches in length by 1.13 in breadth.

GENUS **PHALERIS**, TEMMINCK.

Phaleris, TEMM. Man. Orn. 1820, p. cxii (type, *Alca pygmæa*, GMEL.).

CHAR. Similar to *Simorhynchus*, but bill simple, without accessory deciduous pieces at any season. Head ornamented by several series of lengthened ornamental filamentous feathers.

The single species belonging to this genus resembles both *Simorhynchus* and *Ciceronia*, being, in fact, somewhat intermediate. It must be considered generically distinct, however, unless all three are merged into one genus — a proposition which we cannot indorse.

Phaleris pygmæus.

THE WHISKERED AUK.

Alca pygmæa, Gmel. S. N. I. ii. 1788, 555 (= young; based on *Pygmy Auk*, Penn. Arct. Zool. no. 431).

Simorhynchus pygmæus, Brandt, Mel. Zool. vii. 1869, 228. — Ridgw. Pr. U. S. Nat. Mus. 1880, 211; Nom. N. Am. B. 1881, no. 749. — Coues, 2d Check List, 1882, no. 860.

Alca Kamtschatica, Lepéchin, Nova Acta Petrop. XII. 1801, 369, pl. 8 (= *adult*).

Phaleris camtschatica, Brandt, Bull. Ac. St. Petersb. II. 1837, 347. — Cassin, in Baird's B. N. Am. 1858, 908. — Baird, Cat. N. Am. B. 1859, no. 721.

Simorhynchus camtschaticus, Schleg. Mus. P.-B. Urin. 1867, livr. ix. p. 25. — Coues, Pr. Ac. Nat. Sci. Philad. 1868, 41; Key, 1872, 342; Check List, 1873, no. 623.

Uria mystacea, Pall. Zoog. Rosso-As. II. 1826, 372, pl. 89.

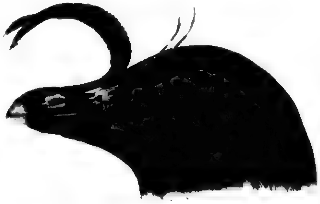
Phaleris cristatella, Temm. Pl. Col. 200 (not of authors).

Mormon superciliosum, Licht. Verz. Doubl. 1823, 89.

Simorhynchus Cassini, Coues, Pr. Philad. Acad. 1868, 44 (Ounimak Pass, Aleutian Islands; = *young*).

Hab. Coasts and islands of the North Pacific, from Unalashka through the Aleutian chain to Kamtschatka.

Adult ♂, *nuptial plumage* (85617, Atkha Island, Aleutian chain, June, 1879; L. M. Turner): Above, glossy blackish slate, appearing more plumbeous in certain lights, especially on the rump; wings and tail dull brownish black. Lower parts sooty plumbeous, darker anteriorly, and nearly white posteriorly, the crissum being quite white; entire sides and flanks uniform deep, slightly smoky, plumbeous, like the breast. Head ornamented by an erect, gracefully recurved crest of narrow plumes of dull black, about 1.50 inches long (when straightened out); anterior half of the lores covered with a triangular patch of pure white pointed feather-tips, this patch bifurcating posteriorly, and continued in one branch downward and backward across the cheeks, the white filamentous tips becoming very long and lanceolate or acicular posteriorly; the upper branch extending to each side of the crown, where spring three very narrow dull white, slightly recurved filaments, nearly as long as the crest, and originating on the same transverse line as the latter; another series of yellowish white filaments originates immediately beneath the eye, and extends backward along the upper border of the auriculars, the posterior ones extending about an inch beyond the terminal portion of the auricular region. Bill in dried skin dull, rather dark, coral-red, the tip first dark grayish, then white; in life, "deep vermilion, with bluish tip" (Turner); "iris blackish blue" (Turner) or white (Stejneger); feet "dusky" in life, dark brown in dried skin. Wing, 4.20 inches; culmen, .35; greatest depth of bill, .30, width at base, .28; tarsus, .80; middle toe, .85.



Summer adult.

Young.

(Another adult male from the same locality, and collected about the same date, is similar, except that the superciliary filaments are pure white, while the crest is light brownish gray. Wing, 4.10 inches; culmen .30; greatest depth of bill, .30; tarsus, .85; middle toe, .90.)

Young (= *Alca pygmæa*, Gmel., and *Simorhynchus Cassini*, Coues; No. 65436, Constantine Harbor, Amchitka Island, Aleutians, July 26, 1873, W. H. Dall): Above, entirely uniform glossy plumbeous-black, including the whole loral, orbital, and upper part of the malar regions; lower part of auricular region, throat, and chin deep smoky gray, the lower part of the throat with a mixed hoary white and dusky suffusion, forming a somewhat triangular transverse patch; foreneck, jugulum, and entire sides, deep uniform slaty plumbeous, gradually lightening on the breast, and changing insensibly to white on the lower part of the abdomen, anal region, and crissum; lining of the wing deep smoky plumbeous or slate. On each side of the forehead, from the base of the culmen back to above the eye, a series of indistinct, small, narrow white feathers, and from the same origin another series of similar feathers running obliquely downward across the lores, thence horizontally backward on a line with the commissure, about as far as the posterior angle of the eye. A whitish streak behind the eye. Maxilla black, more brownish below the nostril; mandible brownish, paler basally; "iris white" (Dall); legs and feet brownish in the dried skin. Wing, 4.10 inches; culmen, .40; depth of bill at base, .30, width, .25; tarsus, .85; middle toe, without claw, .90. *Another specimen* (type of "*S. Cassini*," Coues, No. 46564, ♂, Ouninak Pass, Aleutians, Aug. 3, 1866; W. H. Dall) is similar to the preceding, but has no trace of ornamental filaments about the head, and the whole throat is smoky gray, not distinctly defined against the plumbeous-slate of the foreneck. Wing, 4.25 inches; culmen, .35; depth of bill at base, .25, width, .20; tarsus, .85; middle toe, .85. *Downy young:* Uniform grayish fuliginous, lighter below.

There can be no question that the *Simorhynchus Cassini*, Coues, is the young of *S. camtschaticus*, Pallas; and it is equally certain that the *Alca pygmæa*, Gmel., is the same stage of this species. Gmelin's description[1] fits the young plumage (= "*Cassini*") in every particular, while it does not answer at all to any other known member of the family.

There are several fine adults in breeding-plumage of this species in the National Museum collection, collected in the Aleutian Islands by Mr. Lucien M. Turner, and in the Commander Islands by Dr. Leonhard Stejneger. Of the immature plumage there are, besides the type of "*S. Cassini*," also many specimens, besides several in the down. Two of the latter, with feathers just appearing beneath the surface of the down on the lateral lower parts, as well as on the wings, scapular region, and fore part of the head, were obtained by Mr. W. H. Dall at Kyska Harbor, Aleutians, July 3, 1873. There are also two specimens in the collection from Constantine Harbor, besides the one described above, and one (No. 67399, ♂) from Akootan Island, collected Sept. 10, 1874, by Mr. H. W. Elliott.

We have no notes or information in regard to the habits of this species. It was met with by Mr. Dall on several of the Aleutian Islands. It was originally described by Lepéchin as having come from Kamtschatka.

Messrs. Blakiston and Pryer ("Ibis," 1878, p. 210) state that this bird was obtained from the Kurile Islands (Chigima) in summer by Mr. N. Fukusi. Mr. H. Whitely procured two specimens off the east coast of Japan ("Ibis," 1867, p. 209); and in Commodore Perry's Expedition examples were secured at Simoda and Tokio Bay.

Genus **SIMORHYNCHUS**, Merrem.

Simorhynchus, Merrem, 1819 (type, *Alca cristatella*, Pall. *fide* G. R. Gray). — Coues, Pr. Philad. Acad. 1868, p. 34 (part).

Tyloramphus, Brandt, Bull. Acad. St. Petersb. II. 1837, 348 (same type).

Char. Mandibles triangular, the lower nearly as deep as the upper, with the gonys very straight, forming a more or less decided, and sometimes prominent, angle at the base; *in the breeding season* the base of the bill furnished with several accessory corneous pieces, most conspicuous of which are a rictal plate and a broad, curved, posteriorly truncate shield covering the lateral base of the mandible. Forehead ornamented by an upright recurved tuft of slender feathers, the tips of which overhang the bill; head farther ornamented by a postocular series of slender white filamentous feathers. Plumage plain — uniform dusky above, gray below.

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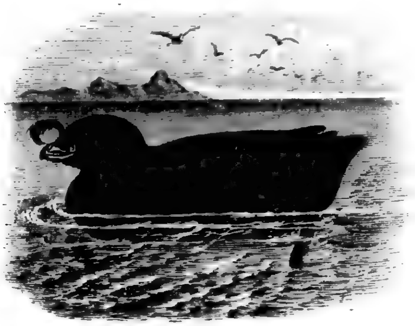
[1] "Rostro nigro, vertice, cervice, dorso, alis, caudâ pedibusque obscuris, jugulo et pectore glaucis, abdomine sordide albo . . . alce minor, 7 poll. longa" (Gmelin).



S. cristatellus.

A single species (*S. cristatellus*) belongs to this genus, as here restricted.

Simorhynchus cristatellus.

THE CRESTED AUK.

Alca cristatella, Pall. Spic. Zool. V. 1769, 20, pl. 3 and pl. 5, figs. 7, 8, 9. — Gmel. S. N. I. ii. 1788, 552, no. 7.

Simorhynchus cristatellus, "Merrem," Bonap. Compt. Rend. XLII. 1856, 774. — Coues, Pr. Ac. Nat. Sci. Philad. 1868, 37 ; Key, 1872, 342 ; Check List, 1873, no. 622 ; ed. 2, 1882, no. 859 ; Elliott's Alaska, 1875, 206. — Ridgw. Nom. N. Am. B. 1881, no. 748.

Phaleris cristatellus, Stephens, Gen. Zool. XIII. 1825, 47, pl. 5. — Cass. in Baird's B. N. Am. 1858, 906. — Baird, Cat. N. Am. B. 1859, no. 719.

Phaleris superciliata, Aud. Orn. Biog. pl. 402 ; B. Am. VII. 1844, pl. 437 (not *Mormon superciliosa*, Licht., = *Alca pygmæa*, Gm.).

Uria dubia, Pall. Zoog. Rosso-As. II. 1826, 371, pl. 87 (= young).

Simorhynchus dubius, Coues, Pr. Ac. Nat. Sci. Philad. 1868, 40.

Alca tetracula, Pall. Spic. Zool. V. 1769, 23, pl. 4, and pl. 5, figs. 10, 11, 12. — Gmel. S. N.I. ii. 1788, 552, no. 8.

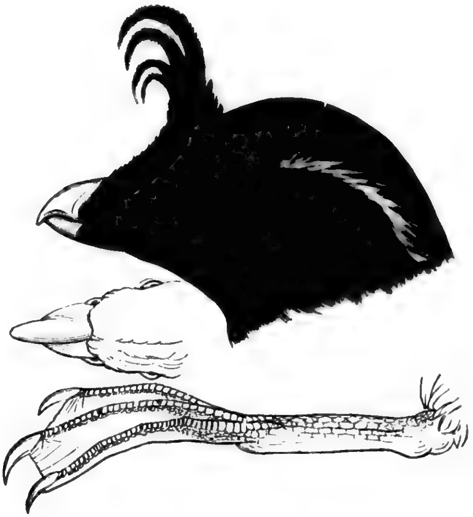
Phaleris tetracula, Cass. in Baird's B. N. Am. 1858, 907. — Baird, Cat. N. Am. B. 1859, no. 720.

Simorhynchus tetraculus, Coues, Pr. Ac. Nat. Sci. Philad. 1868, 43, fig. 9 ; Key, 1872, 342.

Hab. Coasts and islands of the North Pacific, from Kadiak and Unalashka through the Aleutian chain to Kamtschatka and Northern Japan ; north to Prybilof Islands.

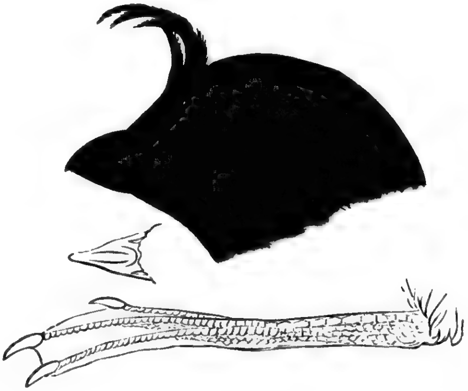
Sp. Char. *Adult, breeding-dress:* Basal portion of the bill covered with complicated supernumerary pieces, the most conspicuous of which is a detached semicircular concave plate situated just above the rictus. Upper parts dusky blackish ; lower parts uniform smoky gray, shading insensibly into the blackish of the upper parts. On the forehead a curled crest of narrow dusky brown feathers, curved forward in the greater part of a circle ; behind the eye, extending thence back over the auriculars, a streak of narrow acicular white feathers. Bill bright orange-red, the end pale horn-color ; iris white ; legs and feet dusky in the dried skin. *Adult, in winter* (= *Alca tetracula*, Pallas) : Similar in plumage, even to the crest and white auricular filaments ; but bill very different, owing to the loss of the supernumerary basal pieces, being much smaller, smooth, and destitute of the rictal shield, the broad expansion of the mandibular rami and nasal shield ;

color of bill dull brownish. *Young* (= *Uria dubia*, Pallas): Bill simple and smooth as in the winter adult, but smaller; plumage as in the adult, but crest and auricular filaments absent or but slightly developed. Bill dull brownish. Total length, about 9.00 inches; wing, 5.25; culmen, .45; tarsus, 1.00; middle toe, with claw, 1.35.



Summer adult.

Judging from the very extensive series of specimens before us, it appears that the young gradually assume both the frontal crest and the white auricular filaments during the latter part of their first year, the peculiar character of the bill being gradually assumed at the approach of the breeding-season. Perfectly adult birds apparently retain as *permanent* ornaments the curled frontal crest and line of white acicular feathers across the auricular region; but after the close of the breeding-season the basal horny parts of the bill (perhaps also of the *entire* bill, since the terminal



Winter adult.

portion becomes much smaller than in the breeding-season) are shed, giving that member a totally different appearance. In this stage the bird is the *Alca tetracula* of Pallas; while before reaching maturity it is the *Uria dubia* of the same author.

The Crested Auk is eminently oceanic, and, like several others of this remarkable group, peculiar to the Northern Pacific Ocean and Behring's Sea, and common both to the Asiatic and the American coasts; rarely resorts to land, and apparently only for the purposes of breeding, which takes place from May to August.

Examples of this species were taken at Simoda and in the Bay of Yedo, Japan, by the naturalists of Captain Perry's Expedition; and Mr. H. Whitely ("Ibis," 1867) mentions having captured two others in a voyage between Yokohama and Hakodadi. It was blowing a gale off the land at the time, and several others were observed. Specimens of this bird were also procured at Kadiak by Mr. Bischoff.

Mr. Dall, in his Notes on the Avifauna of the Aleutian Islands eastward from Unalashka, speaks of the Crested Auk as having been found abundant in very large flocks outside of Captain's Bay, Unalashka; but says that it was rarely seen inside the Bay except during very severe storms. It was resident there, as well as at the Shumagins. In his Notes on the Birds found west of Unalashka, he refers to this species as being abundant off the shore in large flocks, which covered acres. It is a resident species; but from Kyska eastward it is rarely seen in bays or harbors. Several specimens were shot at Plover Bay, Eastern Siberia, by Captain Everett Smith.

It is called the *Canooskie* by the natives of the Prybilof Islands, where it was found by Mr. Elliott, who speaks of it as a fantastic-looking bird, conspicuous by reason of its curling crest and bright crimson bill. It breeds there in company with the *Ciceronia pusilla*, but is present in small numbers as compared with the latter, there being only a few thousand pairs at St. Paul's, and relatively more on St. George's.

It makes its appearance early in May, and repairs to chinks and holes in the rocky cliffs, or deep down under large bowlders and rough basaltic shingle, to lay — making no nest whatever, depositing the egg upon the bare earth or rock. But so well do these birds succeed in secreting it, that, although he was constantly upon the ground where several thousand pairs were laying, he was unable successfully to overturn the rocks under which they hide, or get more than four eggs; which number was the result of over a hundred attempts. The note of this bird while mating is a loud clanging, honk-like sound; at all other seasons it is silent. It lays but one egg, and the parents take turns in the labor of incubation and in feeding their young. The egg is rough, pure white, but with frequent discolorations, and, as compared with the size and weight of the parents, very large; it is of an elongated oblong-oval shape, the smaller end being quite pointed. Length, 2.10 inches; width, 1.40. Mr. Elliott did not see any chicks, nor could he get any information as to their appearance from the natives; but he shot the young as they came out for the first time from their hiding-places, fully fledged with the exception of the crest. The time was from the 10th to the 15th of August, and they were then as large as the old birds, and of the same color and feathering. In this species there is no sexual variation in size or plumage, males and females appearing precisely alike. The bright crimson bill varies considerably in its relative strength and curve, the slenderer bill not being confined to the young birds, some old ones having the light and more pointed beak.

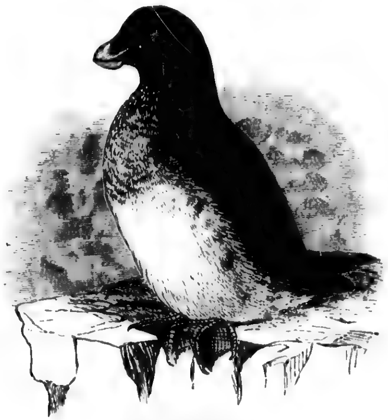
Mr. Adams mentions ("Ibis," 1878) obtaining two specimens that had been picked up at sea by a native, June 14, in Norton Sound, Alaska. They were weak and half starved; these were the only birds of this species which he saw. The Eskimos about Kotzebue Sound and Port Clarence make so much use of the small orange-colored plates at the base of the bill of this bird for ornamenting their water-proof frocks, that it was evident that it must have extensive breeding-places in that vicinity.

Eggs of this species from St. Paul's Island, in the Behring Sea, collected by Mr. Elliott, are of a pure chalky-white color, and of an oblong oval shape, with rounded ends. They measure 2.10 inches in length by 1.45 in breadth.

GENUS **CYCLORRHYNCHUS**, KAUP.

Phaleris, TEMM. Man. Orn. II. 1820, 929 (part).
Cyclorrhynchus, KAUP. Entw. Eur. Thierw. 1829, 15 (type, *Alca psittacula*, PALL.).
Ombria, ESCHSCHOLTZ, Zool. Atl. pt. iv. 1831, 3 (same type).

CHAR. Bill much compressed, the maxilla blunt at the end, and with the culmen and tomium both decidedly convex; mandible strongly falcate, both gonys and tomium being greatly curved upward toward the tip, which is very acute; nasal shield not extending to the culmen, and bill destitute of accessory deciduous appendages. Plumage dull (dusky above and white below), ornamented only by a single longitudinal postocular series of slender white filamentous feathers.



C. psittaculus.

The form of the bill in this genus is unique, separating it trenchantly from *Simorhynchus*, its nearest ally. But one species is known.

Cyclorrhynchus psittaculus.

THE PARROT AUK.

Alca psittacula, PALL. Spic. Zool. V. 1760, 13, pl. 2, and pl. 5, figs. 4, 5, 6.
Phaleris psittacula, TEMM. Man. II. 1820, 929. — COUES, Key, 1872, 342; Check List, 1873, no. 621; Elliott's Alaska, 1875, 204. — RIDGW. Nom. N. Am. B. 1881, no. 747.
Ombria psittacula, ESCHSCH. Zool. Atl. IV. 1831, 3, pl. 17. — CASS. in Baird's B. N. Am. 1858, 410. — BAIRD, Cat. N. Am. B. 1859, no. 725. — ELLIOT, Illustr. Am. B. I. 1869, pl. 70.
Simorhynchus psittaculus, SCHLEG. Mus. P.-B. IX. 1867, 24. — COUES, Pr. Ac. Nat. Sci. Philad. 1868, 36, fig. 6 (bill); 2d Check List, 1882, no. 858.

HAB. Coasts and islands of the North Pacific (Kamtschatka, Prybilof Islands, Aleutians, etc.). Japan. Accidental in Sweden!

SP. CHAR. *Adult, breeding-plumage:* Head (all round), sides of neck, sides, and entire upper parts slate-dusky or dull black, more plumbeous on the throat, which is usually more or less mixed with whitish. Lower parts, except as described, plain white. A line of narrow acicular white feathers beginning just beneath the eye and extending back over the auriculars. Bill wholly orange-red; iris white; feet brownish in the dried skin. *Adult, in winter* (?): "Upper parts as described above, but no whitish feathers below and behind the eye. Entire under parts white, marbled on the throat, breast, and sides with dusky or blackish; this color usually occupying chiefly or wholly the tips of the feathers, whose bases are white. The mottling is thickest on the breast, most sparse on the abdomen; but it varies in degree with almost every specimen" (COUES). *Young* (?): "A state of plumage is described as that of the young, in which the white occupies almost the whole under parts, and is scarcely mixed with dusky, even on the throat and breast" (COUES).

Wing, about 5.40–6.00 inches; culmen, about .60; greatest depth of the bill nearly the same; tarsus, 1.00; middle toe, 1.10.

In his "Monograph of the *Alcidæ*," Dr. Coues describes the adult as having the "chin, throat, breast, and flanks fuliginous or brownish black, lighter or grayer below than above;" but in a series of nearly fifty examples, including thirty-nine collected on the breeding-grounds in June and July, not one has the breast uniform dusky, the greater number having not only the breast, but the jugulum also, white, the latter, however, clouded with dusky.[1] In many even the chin and throat are mottled with grayish white. All these specimens, it may be remarked, possess the streak of white filaments across the auricular region.

This is an oceanic and a North Pacific species, resident in the open sea, and only visiting land for the purposes of breeding. It is found in the Aleutian Islands, and also at the Prybilof Group, and is distributed irregularly throughout the Northern Pacific and Behring's Sea.

It is of accidental occurrence in Sweden. M. Olphe-Galliard records in the "Revue et Magasin de Zoologie" (1868, pp. 95, 96) the occurrence in Sweden of an individual of this species. It was taken alive near Jönköping about the middle of December, 1860; and the "Ibis" of 1869 (p. 221), gives from Professor Sundeval some further particulars of this extraordinary fact. The bird had crept, through a fence set along the edge of the water by the side of Lake Vetter, into the courtyard of a weaving manufactory, where it was caught by two men, and soon after died. Its species was determined by Professor Fredrik Malmgren, of the University of Lund.

Mr. Dall, in his Notes on the Avifauna of the Aleutian Islands west of Unalashka, speaks of it as resident and not uncommon at Amchitka, but not seen anywhere else. He thinks that Brandt is mistaken in supposing that the peculiarly shaped bill is used for opening bivalve shells. He has never found anything in its crop except fragments of crustacea, and thinks that the bird uses its sharp, recurved lower mandible in tearing out the softer parts of the larger Isopods, and in picking them out of crevices in the rocks and from under round stones.

Mr. H. W. Elliott states that this quaintly beaked bird is quite common on the Prybilof Group, and that it can be obtained at St. George's in considerable numbers. It comes here early in May, and selects a deep chink or crevice of some inaccessible cliff, where it lays its single egg and rears its young. It is very quiet and undemonstrative during the pairing-season, its only note being a low, sonorous, vibrating whistle. Like the *Simorhynchus cristatellus*, it will breed in company with the

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[1] Since the above was written, several specimens from Behring's Island, collected by Dr. L. Stejneger in May, 1882, have been received at the National Museum. These have the throat and *upper part* of the jugulum uniform dusky; but the whole breast is pure white, like the abdomen.

Choochkie, but will not follow it upon the uplands, being found only on the shoreline. It is the *Baillie Brushkie* of the natives, the Paroquet Auk of authors.

The egg — which is laid upon the bare earth or rock — is pure white, oblong-ovate, measuring 2.50 by 1.50 inches. It is exceedingly difficult to obtain, owing to the bird's great caution in hiding it, and care in selecting for that purpose some deep and winding crevice in the face of the cliff. At the entrance to this nesting-cavern the parent will sometimes squat down and sit silently for hours at a time, if undisturbed. This bird does not fly about in flocks, but seems to lead a quiet, independent life by itself, apparently not caring to associate with its kind. The young, by the 10th to the 15th of August, may be observed for the first time coming out from their secure retreat and taking to wing, being then as fully fledged and as large as their parents. They take their departure from the 20th of August to the 1st of September, and go out upon the North Pacific for the winter, where they find their food, which consists of *Amphipoda* and fish-fry. Mr. Elliott has never seen one, among the thousands that were around him, opening bivalve shells, as this bird has been said by Professor Brandt to do. It feeds at sea, flying out every morning, returning in the afternoon.

The shape of its egg is extremely variable. One measures 2.25 inches by 1.50, and another 2.35 by 1.45, the latter example being remarkably narrow, elongate, and pointed. The shell is minutely granular, and rough to the touch; it is white, unmarked, but often found variously soiled and discolored — sometimes by mechanical effect, and sometimes by the fluids of the cloaca. So effectually did these birds secrete their eggs in the deep crevices of the cliffs, that Mr. Elliott was unable to obtain more than four perfect specimens, although several hundreds were breeding on the cliffs near the village at St. George's Island, each pair having been watched closely by him during the summer of 1873. Nothing save blasting-powder, or some similar agency, could open the basaltic crevices in which this bird hides; and if this were done the egg would be destroyed.

An egg of this species in the Smithsonian Museum is of a dirty chalky-white color unspotted, of an oblong-oval shape, with rounded ends, and measures 2.25 inches in length by 1.60 in breadth. It was taken on St. George's Island, in Behring's Sea, by Mr. H. W. Elliott.

GENUS **PTYCHORAMPHUS**, BRANDT.

Ptychoramphus, BRANDT, Bull. Ac. St. Petersb. II. 1837, 347 (type, *Uria aleutica*, PALL.).

CHAR. Bill elongate-conical, and somewhat depressed, the maxilla being much broader than deep at the base; culmen straight for the basal half, then gently curved; gonys straight and rapidly ascending terminally; nostrils overhung by the prominent, flaring edge of the nasal membrane, or shield, which in the breeding-season is more or less corrugated above. Head entirely destitute of any ornamental plumes or crest; plumage plain slaty above, whitish beneath.

Ptychoramphus aleuticus.

THE ALEUTIAN AUK.

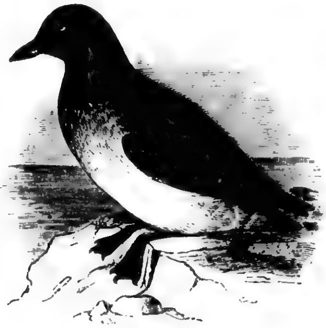
Uria aleutica, PALL. Zoog. Rosso-As. II. 1826, 370.

Ptychoramphus aleuticus, BRANDT, Bull. Ac. St. Petersb. II. 1837, 347. — CASS. in Baird's B. N. Am. 1858, 910. — BAIRD, Cat. N. Am. B. 1859, no. 724. — COUES, Pr. Ac. Nat. Sci. Philad. 1868, 52; Key, 1872, 343; Check List, 1873, no. 625; ed. 2, 1882, no. 862. — RIDGW. Nom. N. Am. B. 1881, no. 751.

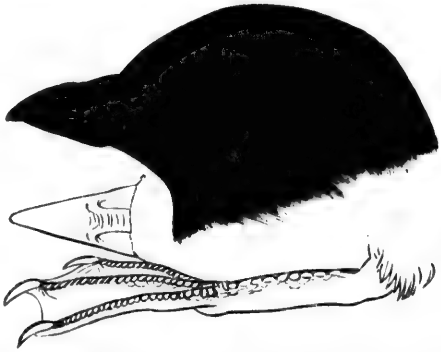
Mergulus Cassinii, GAMBEL, Pr. Ac. Nat. Sci. Philad. 1845, 266 (coast of California); Journ. Ac. Nat. Sci. Philad. II. 1850, pl. 6.

Hab. Whole Pacific coast of North America, from the Aleutian Islands south to San Diego, Cal.; breeding as far south as the Farallones.

Sp. Char. *Adult:* Above, entirely uniform plumbeous black; under part and sides of the head, with fore part and sides of the neck, plumbeous, blending gradually into the blackish of the pileum and nape; a white spot on the lower eyelid. Lower parts, from the jugulum back, immaculate white, the sides, beneath the wings, and the femoral region plumbeous. Bill black, the basal third of the mandible yellowish or pale colored; iris white; legs and feet bluish and dusky in life, brownish dusky in the dried skin. *Young:* Apparently similar to the adult.


P. aleuticus.

Total length, 8.00–9.50 inches; extent, 16.00–18.50; wing, 4.75–5.25; tail, 1.50–1.75; culmen, .75; depth of bill at base, .40; tarsus, 1.00; middle toe, with claw, 1.40.



The only seasonal changes in this very plainly colored species consist apparently in the wrinkling or corrugation of the nasal shield, especially on top, in the breeding-season.

The Aleutian Auk was not met with by Mr. Dall among the Aleutian Islands, nor by Mr. Elliott among the Prybilof Islands. It is an oceanic species, and is presumed to be an inhabitant of both shores of the Pacific Ocean.

Dr. Cooper informs me that all the specimens of this bird which he has obtained are considerably larger than the measurements given by Mr. Cassin. He found two of this species at San Diego, on the shore, after a severe storm, in January, both being dead. These birds are usually to be met with a long distance off the shore, but within sight of land, often rising almost from under the paddle-wheels of the steamers. In May, 1863, he found them very numerous on Santa Barbara Island, where they had undermined almost every part of the soft earthy surface with their burrows. These are about four feet long, horizontal, and run at about the depth of a foot beneath the surface, though often so near it as to be broken in by the weight of a man stepping on them. On examining about a dozen burrows he found in most of them young in every stage of growth, showing that they must have begun about the first of May to deposit their eggs. Where hatching had not taken place there was one egg in each burrow, on which either the male or the female was sitting. These are pure white, and measure 1.70 inches in length by 1.25 in breadth, the ends being very nearly of equal size.

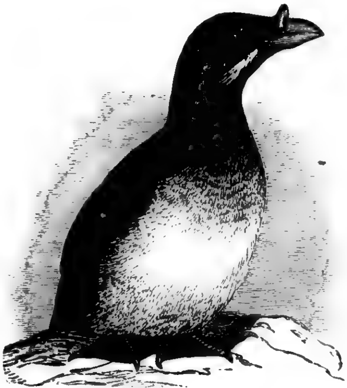
These birds are also found in the Farallones, where, however, they are not very abundant, the rocky soil being unsuited for their burrows, so that their nests can only be made in accidental cavities. Mr. Gruber, however, obtained an egg there in 1862, and dead birds are not infrequently to be found, many dying from accidents or from blows inflicted by other and stronger birds. An egg from the Farallones measured 1.78 by 1.30 inches, and was of an unusually oval form. During the day most of the birds go off far from the islands, and are seen swimming about, occasionally diving for fish, etc., or perhaps asleep the greater part of the time, their most active period being the earlier part of the night. At that time they fly to their burrows; and though so very short-winged, when fairly started go like bullets, often killing themselves by flying against the ground; and if there is a camp-fire on the island, many fly directly into it, being dazzled and perplexed by its light. The male birds, alighting near their burrows, make the night melodious with their cries, being really musical for a sea-bird, and reminding one of the Whip-poor-will. As nearly as this cry can be expressed in words, it is *whit-cheer, whit-cheer*, etc., repeated about five times, faint at first, gradually dying, and then falling with a peculiar ringing sound. To some ears the cry sounds like *too-near;* and this name has been given to the bird by the sealers.

Dr. Cooper found the birds of this species most abundant during the day about San Nicolas Island, where the shoal waters furnish them with excellent feeding, and whence they probably fly every night to Santa Barbara Island — a distance of about thirty miles. Three eggs in the collection of the Smithsonian Institution range from 1.80 to 1.95 inches in length, and from 1.25 to 1.30 in breadth. They are of oblong-oval shape, and of a pure chalky white color.

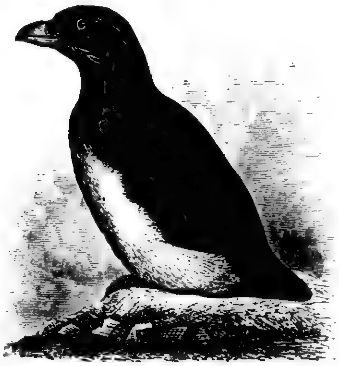
GENUS **CERORHYNCHA**, BONAPARTE.

Cerorhinca, BONAP. Ann. Lyc. N. Y. 1828, 427 (type, *C. occidentalis*, BP., = *Alca monocerata*, PALL.).
Ceratorhynchus, SUNDEV. Orn. Syst. 1836, 130.
Ceratorhyncha, BONAP. Comp. List, 1838, 66. — COUES, Pr. Philad. Ac. 1868, 28.
Cerorhina, BRANDT, Bull. Sc. St. Petersb. II. 1837, 348. — CASS. in Baird's B. N. Am. 1858, 904.
Ceratorrhina, BONAP. Oss. Règ. An. 1830, 134; Saggio, 1831, 62.
Ceratorhina, AUD. Orn. Biog. V. 1839, 104.
Chimerina, ESCHSCHOLTZ, Zool. Atl. 1829, 2 (type, *C. cornuta*, ESCHS., = *Alca monocerata*, PALL.).

CHAR. Culmen regularly and decidedly convex; gonys straight, or slightly concave, with an accessory corneous piece at the base, interposed longitudinally between the rami of the mandible from their symphesis back to the feathers of the chin; this deciduous, however, and, like the compressed vertical process of the nasal shield, characteristic of the breeding-season. When the latter is cast, the upper outline of the cere is nearly straight, and depressed decidedly below the level of the base of the culmen. Head ornamented by four (two on each side) longitudinal series of filamentous white feathers. Plumage dull-grayish dusky above, whitish below, the under side of the head and neck brownish gray.



C. monocerata, summer adult.



C. monocerata, winter adult.

Of this remarkable genus but one species is known; this having given ornithologists much trouble before the deciduous character of the nasal horn and mandibular process was fully understood; the same species in winter plumage, with these appendages absent, being referred to a different genus ("*Sagmatorhina*").

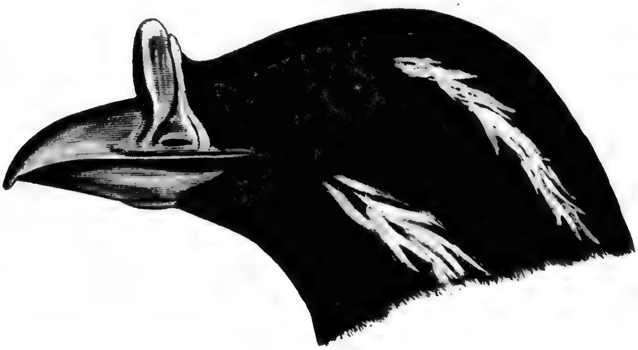
Cerorhyncha monocerata.

THE HORN-BILLED AUK.

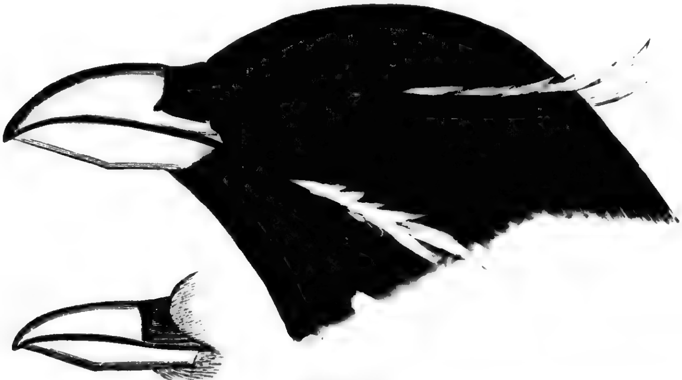
Alca monocerata, Pall. Zoog. Rosso-As. II. 1826, 362, no. 414.
Cerorhina monocerata, Cass. in Baird's B. N. Am. 1858, 905. — Baird, Cat. N. Am. B. 1859, no. 717.
Ceratorhyncha monocerata, Coues, Pr. Ac. Nat. Sci. Philad. 1868, 28, figs. 1, 2.
Ceratorhina monocerata, Coues, Key, 1872, 341; Check List, 1873, no. 620; ed. 2, 1882, no. 857. — Ridgw. Nom. N. Am. B. 1881, no. 620.
Phaleris cerorhynca, Bonap. Zool. Journ. 1827, 53.
Cerorhinca occidentalis, Bonap. Ann. Lyc. N. Y. (Synop. N. Am. B.) IV. 1828, 428. — Nutt. Man. II. 1834, 538.
Ceratorhina occidentalis, Aud. Orn. Biog. V. 1839, 104, pl. 402, fig. 5.
Uria occidentalis, Aud. B. Am. VII. 1844, 364, pl. 471.
Cerorhina orientalis, Brandt, Bull. Ac. St. Petersb. II. 1837, 348 (*lapsus calami* for *occidentalis*?).
Chimerina cornuta, Eschscholtz, Zool. Atl. III. 1829, 2, pl. 12.
Cerorhina Suckleyi, Cass. in Baird's B. N. Am. 1858, 906 (adult without knob on bill). — Baird, Cat. N. Am. B. 1859, no. 718.
Sagmatorhina Suckleyi, Coues, Pr. Ac. Nat. Sci. Philad. 1868, 32, figs. 4, 5 (bill).
The Horn-billed Guillemot, Cass. & Baird, ll. c.

Hab. Coasts and islands of the North Pacific, breeding as far south as California (Farallon Islands) and Northern Japan; in winter, as far as Lower California.

Sp. Char. *Adult, breeding plumage:* Entire upper parts dull brownish black, the feathers sometimes with paler or grayish brown tips; lateral and under parts of head and neck, jugulum, and sides smoky plumbeous; lower parts white, usually faintly clouded with smoky gray. A row of straight white filamentous feathers along each side of the occiput, originating just behind and above the eye; another row of similar but larger feathers across the cheeks, from the rictus back. Bill dull orange, the culmen, with anterior and posterior edges of the horn, black; legs and feet pale yellowish brown (in skin), the webs and claws dusky; iris hazel (W. A. COOPER, MS.). *Adult, in winter* (= "*Cerrohina Suckleyi*," CASS., "*Sagmatorhina Suckleyi*," COUES): Exactly like the summer plumage, but breast more uniformly smoky gray, the abdomen more uniform white; horn-like process of the nasal shield and mandibular process entirely absent. *Young, first plumage:* Similar to the adult, but white filamentous feathers of the head entirely absent, maxillary horn wanting or imperfectly developed, the bill smaller and of a dusky brown color. *Downy young:* Uniform sooty grayish brown, lighter than the corresponding stage of *Lunda cirrhata*, and with slenderer bill, but otherwise very similar.



Summer adult.



Winter adult.

Total length, about 14.00–15.50 inches; wing, 7.25; culmen, from cere or anterior edge of horn, 1.00; height of horn from nostril, .75; tarsus, 1.10–1.20; middle toe, with claw, 1.80–1.90.

The Horn-billed Guillemot, once supposed to be a very rare species, has been found by recent explorations to be quite common, not only on our western coast, but in various parts of the Pacific. It may be regarded as an oceanic species of the Pacific, breeding on the islands of the western coast of America, and probably on the eastern side of Asia. It was procured at Hakodadi, Japan, by Mr. R. Swinhoe, in the months of March and April ("Ibis," 1874); and others were obtained by the United States Expedition under Commodore Perry, as also by Mr. Whitely, at the same place on the 11th of May, the dates indicating that it probably breeds there. The last found it by no means rare; and it could be very easily shot, as should it dive on the approach of a boat it will rise to the surface again in a very short time. How far north on the Asiatic coast it extends we have no data to show; but as it is found on the American as far north as Sitka, it is also, very probably, common along the entire Pacific coast of Asia. Mr. Bischoff collected a number of specimens at Sitka; and Mr. R. Browne, in his List of the Birds of Vancouver Island, mentions finding it common in the neighborhood of Fort Rupert, and states that it was seen as far north as Fort Simpson.

At San Diego, during the stormy winter of 1861–1862, Dr. Cooper obtained many specimens of this Guillemot, most of them picked up dead on shore, where they had apparently perished on account of the severity of the weather at the time of their change of plumage, as happens with the Pelicans and the Cormorants. They were usually seen swimming near the shore. On no other occasion did he meet with any of these birds, though they are probably common along the whole coast from the Straits of Fuca to Margarita Bay. Dr. Heermann states that the Horn-billed Guillemot is nocturnal in its habits in the summer, inhabiting burrows among the rocks in the Farallones; and that — although he met with none there — he thinks they also burrow on Santa Barbara Island, and perhaps on others, lying concealed during the day, and going out to fish at night. Dr. Heermann saw one toward night fly ashore with a fish in its mouth, and plunge into a hole. Dr. Cooper conjectures that, like the *Ptychoramphus aleuticus*, this bird may remain at sea during the day, and come on shore at night in order to feed its young.

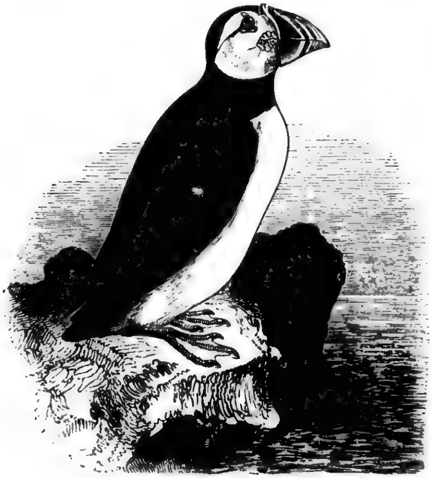
An egg of this species — obtained on the Farallones by Mr. Gruber for Dr. Cooper in May, 1862 — measures 2.60 inches in length by 1.80 in breadth, is of a dirty white color, and in shape resembles the egg of the common Hen.

The late Mr. James Hepburn obtained birds of this species in abundance on Smith's Island, south of San Juan, Washington Territory. They were breeding in the most astonishing numbers, so that the light soil of the island was perfectly honeycombed with their burrows. The lighthouse-keepers were feeding their dogs and pigs with the eggs and with the old birds. The eggs are of a dull chalky white, with discolorations and faint shell-markings of obscure purplish gray, and are very similar to the eggs of *Fratercula corniculata*. They range from 2.65 inches to 2.90 in length, and in breadth from 1.80 to 1.90.

GENUS **FRATERCULA**, BRISSON.

Fratercula, BRISS. Orn. VI. 1760, 81 (type, *Alca arctica*, LINN.).
Mormon, ILLIGER, Prodr. 1811, 283 (same type).
Larva, VIEILL. Analyse, 1816, 67 (same type).
Ceratoblepharum, BRANDT, Bull. Sc. St. Petersb. II. 1837, 348 (same type).

CHAR. Bill extremely deep and excessively compressed, the basal portion covered in the breeding-season by a greater or less number of deciduous horny laminæ. Basal depth of the closed bill nearly or quite equal to the length of the gonys; culmen arched, sometimes even to the extreme base; gonys convex toward the base, straight, or even sometimes slightly concave, for the terminal half, or more; deciduous nasal shield becoming rapidly narrower toward the top; terminal portion of the bill transversely sulcate; base of the maxilla surrounded by a deciduous thickened horny rim, and rictus ornamented by a deciduous tumid rosette; eyelids furnished with deciduous horny plates. No tufts about the head in the breeding-season.



F. arctica.

The deciduous accessory pieces of the bill, together with the rictal and palpebral ornaments, are cast at the close of the breeding-season.[1]

Following is a key to the known species.

1. **F. arctica.** Horny process of upper eyelid short, subconical; grooves of the bill very oblique, broad, and distinct, the deciduous shields occupying not more than the basal half of the bill. Chin and whole throat grayish.
   - *a. arctica.* Bill and general size smaller. Culmen, 1.60–1.90 inches; gonys, 1.40–1.50; depth of maxilla at base, .75–.90; of mandible, .40–.50; tarsus, 1.00–1.10; middle toe, without claw, 1.25–1.40. Wing, 6.00–6.50. *Hab.* Coasts of the North Atlantic, from Southern Greenland southward.
   - *β. glacialis.* Bill and general size larger. Culmen, 2.00–2.30 inches; gonys, 1.40–1.60; depth of maxilla at base, .85–1.00; of mandible, .70–.80; tarsus, 1.10–1.35; middle toe, without claw, 1.45–1.60. *Hab.* Arctic Ocean, from Spitzbergen to northern and western Greenland; probably also western shores of Baffin's Bay, and Northern Labrador.
2. **F. corniculata.** Horny process of upper eyelid narrow, elongated, horn-like; grooves of bill nearly vertical, narrow, and less distinct; deciduous shields occupying much more than the basal half of the bill. Whole throat blackish, only the chin gray. *Hab.* Coasts and islands of the North Pacific and Behring's Sea.

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[1] See Dr. Louis Bureau: De la Mue du Bec et des Ornements Palpébraux du Macaroux arctique, *Fratercula arctica* (Lin.), Steph., après la Saison des Amours (Bull. Soc. Zool. de France, 1878, pp. 1–21, pls. iv. v.).

Fratercula arctica.

THE COMMON PUFFIN.

Alca arctica, Linn. S. N. I. 1758, 13, no. 3; ed. 12, I. 1766, 211, no. 3.

Fratercula arctica, Stephens, Shaw's Gen. Zool. XIII. 1825, 37. — Coues, Pr. Philad. Acad. 1868, 21; Key, 1872, 340; Check List, 1873, no. 618; ed. 2, 1882, no. 854. — Bureau, Bull. Soc. Zool. France, 1878, pl. iv. figs. 1–5. — Ridgw. Nom. N. Am. B. 1881, no. 743.

Mormon arctica, Naum. Isis, 1821, 783, pl. 7, figs. 5–7. — Nutt. Man. II. 1834, 548. — Aud. Orn. Biog. III. 1835, 105, pl. 213; oct. ed. VII. 184, pl. 464. — Cass. in Baird's B. N. Am. 1858, 903. — Baird, Cat. N. Am. B. 1859, no. 715.

Mormon fratercula, Temm. Man. 1820, 933. — Gould, B. Eur. V. 1837, pl. 403.

Alca deleta, Brünn, Orn. Bor. 1764, 25, no. 104 (= young).

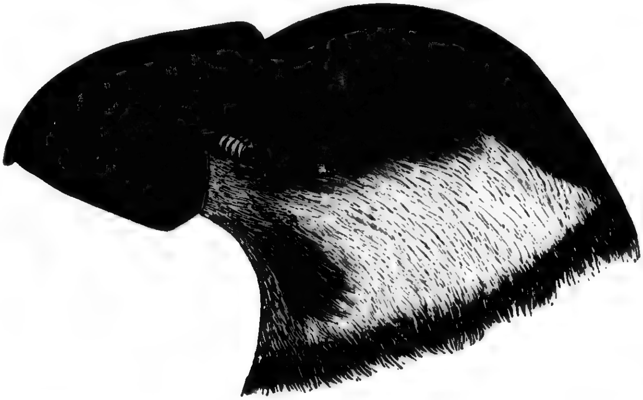
Alca labradoria, Gmel. S. N. I. ii. 1788, 550, no. 6 (= young).

Mormon polaris, Brehm, Isis, 1826, 985.

Mormon Grabæ, Brehm, Vög. Deutschl. 1831, 999.

Hab. Coasts and islands of the North Atlantic, as far as Southern Greenland; south in winter to Atlantic States, and breeding as far south as France and the Bay of Fundy.

Sp. Char. *Adult, in breeding-season:* Pileum fuliginous-dusky, inclining to brownish slate, darker along the lateral margin, lighter anteriorly, the forehead sometimes almost ashy; rest of the head, including chin and throat, light ashy, the throat with a darker suffusion on each side; broad collar across foreneck fuliginous-dusky, growing gradually black on sides of neck, the nape and entire upper parts uniform deep black. Lower parts white, the sides (beneath wings) grayish fuliginous; lining of wings light smoky gray. "Bill with the basal rim and the first ridge of the upper mandible dull yellow, the intervening space grayish blue; basal margin of lower mandible bright red; first ridge and intervening space as in the upper, the rest bright red (carmine tinged with vermilion); membrane at the base of the gape gamboge-yellow, inside of mouth, and tongue, yellow; edges of eyelids vermilion, horny appendages of eyelids grayish blue; iris light blue; feet vermilion, claws black"[1] (Audubon). *Adult, winter plumage:* Similar to



F. arctica, winter adult.

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[1] "*Adult* (*breeding-plumage*). — Iris hazel-brown. Eyelids vermilion-red, fleshy callosities bluish ash. Base of bill and first ridge dull yellowish, the contained space bluish, rest of bill vermilion-red, the tip of the lower mandible and the two terminal grooves yellowish. Legs and feet coral-red, claws black" (Coues).

the above, but the basal shields of the bill wanting, and replaced by a soft skin of a brownish-black color, the horny appendages to the eyelids wanting, the rictal "rosette" much reduced in size, of a dull purplish red color; sides of head darker gray, the loral and orbital regions quite blackish.

Total length, about 11.75 inches; extent, 23.00; wing, 6.00–6.50; culmen, 1.60–1.90; gonys, 1.40–1.50; depth of maxilla at base, .75–.90; of mandible, .40–.50; tarsus, 1.00–1.10; middle toe, without claw, 1.25–1.40.

We are unable to appreciate sufficiently decided or constant differences between specimens of corresponding sex, age, and season from Labrador, Southern Greenland, Norway, and the Orkneys. Examples from the Faröes appear to have slenderer bills, and those from the coast of France smaller bills, than any others in the collection examined; but these apparent differences may not prove constant in a larger series.

The "Sea Parrot," the "Puffin," or "Coulternet," as this bird is called in various localities, is an oceanic bird, found exclusively in the waters of the Atlantic, and breeding on the eastern coast of North America from Eastern Maine to Greenland, and in Europe from Great Britain to the North Cape. A few of this species breed in the islands off the coast of Portugal, and it also extends its movements into the Arctic Sea north of Europe.

According to Reinhardt it is a resident species of Greenland. It also visits the Faröe Islands, Iceland, and Nova Zembla, and other northern regions. According to the observations of Mr. Howard Saunders, this species, though not abundant, is found not uncommon on the east coast of Spain. It was also found by the fishermen on the Island of Dragonena — where, however, it does not breed. Mr. Saunders was informed that it is abundant, occurring in flocks, off the coast of Morocco, near Mogador. The most southern breeding-place of this bird with which Mr. Saunders is acquainted is at the Berlengas, or Farallones, a group of rocks in the Atlantic, a little north of the latitude of Lisbon. The Puffin in the winter also visits the shores of Holland and France. A single specimen was taken at Genoa in the winter of 1823; and M. Savi includes it in his "History of the Birds of Italy." Accidental specimens wander occasionally to Sicily and to Malta; in the latter place Schembri obtained a single specimen in 1832 ("Ibis, 1864).

In Great Britain, according to Yarrell, it is only a summer visitor, appearing early in April, and departing about the last of August. There it breeds in the crevices of high rocks or cliffs on the sea-coast, or in the short turf on the table-lands above. Early in May it deposits its single large egg, sometimes in the fissures on the perpendicular surface of the cliffs, to the depth of three or four feet from the front; sometimes in rabbit-warrens, which are common on that coast; and sometimes, selecting islands that are covered with a stratum of vegetable mould, the birds dig their own burrows. This hole is generally excavated to the depth of three feet, often in a curving direction, and occasionally has two entrances. The digging is principally performed by the male; and he is at times so intent upon his work as to suffer himself to be taken by the hand. This happens also with the female when incubating. They can be handled, however, only at the risk of receiving a severe bite from their sharp and powerful bill. The egg is laid at the farthest end of the burrow. It is 2.75 inches long and 1.63 broad, pure white when deposited, sometimes spotted with pale cinereous, and often becoming soiled and dirty from contact with the earth, as no materials are ever collected for the nest. The young are hatched after a month's incubation; these are covered at first with a long blackish down, which is soon replaced by their feather-plumage; and at the end of a month or five weeks they are able to quit their burrow and follow their parents to the open sea. When the time for migration comes, those birds which are not able to follow their parents are deserted.

On the land the Sea Parrot rests on the whole length of the foot and heel, and walks with a waddling gait. It flies rapidly for a short distance, and can swim and dive well.

On the American coast this bird formerly bred abundantly on the rocky islands near the mouth of the Bay of Fundy. This it still does, but in greatly diminished numbers. It becomes quite abundant off the coast in the latter part of the fall and during winter and early spring, and extends along the coast as far as Long Island, where, according to Giraud, it is of occasional but rare occurrence. Audubon has known it to wander as far south as the Savannah River. This happened only once; namely, in the winter of 1831–1832.

In his excursion to Labrador Audubon visited several of the breeding-places of this bird. In one, where the soil was light, many of the burrows extended to the depth of five or six feet. The ground was everywhere perforated like a rabbit-warren. On the 28th of June none of the eggs were found to have been hatched. On the 12th of August he visited Perroket Island, about two miles from the harbor of Bras d'Or, where these birds were breeding in thousands. This time he found the burrows inhabited by young birds of different ages. Clouds of Puffins were flying overhead, having fish in their mouths, with which to feed their young. The fish were about five inches in length, and are known as the "Lint." As they flew the birds uttered a loud croaking noise, but did not drop their fish, even when brought down by a shot. They manifested great affection for each other; and when one was shot, its companions would alight by its side, swim around it, push it with the bill, as if urging it to fly or dive. Those that were wounded and fell on the land immediately ran into a hole, where it was not safe to meddle with them. Those which were caught alive bit so severely, and scratched so desperately with their claws, that their captors were only too happy to let them go. The burrows communicated in various ways with each other, and the whole island was so perforated that there was danger of falling in at every step. The birds did not leave during his visit, but attended to their duties. Here one rose from under his feet; there, within a few yards, another would alight with a fish and dive into its burrow, or feed the young that stood waiting at the entrance. The young birds were continually fighting, and their cries, which resembled the wailing of young whelps, came up from under the ground with sepulchral effect. In some instances two birds were found sitting, each on its egg, in the same hole. He found great variation both in the shape and size of the eggs, some being much more rounded than others. When boiled, the whites of the eggs became of a livid-blue color. He found them unfit for food, and they are never collected by the eggers.

The flight of these birds is direct and firm. They can rise either from the water or the land; and can do this, if necessary, without running to gain impetus. Some that he kept on board his vessel fed freely, and were very amusing; but they were continually uttering an unpleasant grunting noise, and were never quiet during the night.

In the young the bills do not begin to acquire their peculiar form for several weeks, and it is several years before the change is complete.

Dr. Coues, in September, 1860, after his visit to Labrador, wrote me in reference to this species, that they were breeding on the Puffin Island, so called, on the northern side of the mouth of Groswater Bay. In several respects his statements are in conflict with those of Audubon. At the place where the birds live which he visited, the soil is of a kind in which the birds can easily dig. The holes were just about deep enough to be reached with the arm, and generally straight, though some were quite tortuous. The entrances were worn perfectly smooth and slippery. Many of the holes were only passages from one nest to another. The nest itself consisted of only a few dried grasses laid at the end of the hole. Only one egg is laid; and this is obscurely and often almost imperceptibly blotched with light bluish ash. He heard not the slightest sound from one of these birds; but as he climbed the side of the island they started out from their holes all around him. Each bird would generally stop for a moment at the mouth of its hole to see what was going on, and then scramble and flutter down to the water, diving immediately. When taken in the hand it struggles and bites furiously, at the same time uttering a hoarse croaking cry. Its inner nail is very strong, sharp, and curved. When the bird is standing, this lies flat; but when scratching or digging, it is held upright. There was no evidence of any sympathy between the survivors and those wounded or dead, who were not noticed in any way by those which had escaped injury. The flight of this bird, when once on the wing, is well sustained and firm, and is performed with short, quick beats. When it throws itself into the air from a rock it launches out with ease; but it rises from the water with difficulty, flapping along over its surface before it can rise well on the wing. When standing at the entrance of its burrow it presents a peculiarly grotesque appearance, its short, thick-set body, enormous head and bill, with its contrast of colors, giving it an air, the comicality of which its upright position and its odd movements contribute not a little to enhance.

This species was observed by Mr. Kumlien in abundance from the Gulf of St. Lawrence to Hudson's Straits. It was unknown in Cumberland, but was common on the Greenland coast as far north as 70°. They breed abundantly on the islands in Disco Bay.

M. Bureau has recently published ("Bull. Soc. Zool. France," 1878) a very interesting account of the moulting of portions of the beak of this species after their breeding-season. Certain portions of its beak at the base of the maxilla and of the mandible, as well as the horny excrescences above and below the eye, are regularly shed every year, and as regularly assumed as the breeding-season approaches. The number of deciduous pieces is thirteen. It is quite probable that similar changes take place in the other species of this genus.

Eggs of this species in the Smithsonian Collection, collected in Labrador, have a ground of a dull chalky white, with faint shell-markings about the larger end of a lavender-gray. Four specimens present the following variations in their respective measurements: 2.40 by 1.85 inches; 2.55 by 1.75; 2.60 by 1.65; 2.65 by 1.70.

Fratercula arctica glacialis.

THE LARGE-BILLED PUFFIN.

Mormon glacialis, "LEACH," NAUM. Isis, 1821, 782, pl. 7. fig. 2. — CASS. in Baird's B. N. Am. 1858, 903. — BAIRD, Cat. N. Am. B. 1859, no. 714.

Fratercula glacialis, LEACH, Steph. Gen. Zool. XIII. 1825, 40, pl. 4, fig. 2. — COUES, Pr. Philad. Acad. 1868, 23. — BUREAU, Bull. Soc. Zool. France, 1878, pl. v. figs. 1, 2.

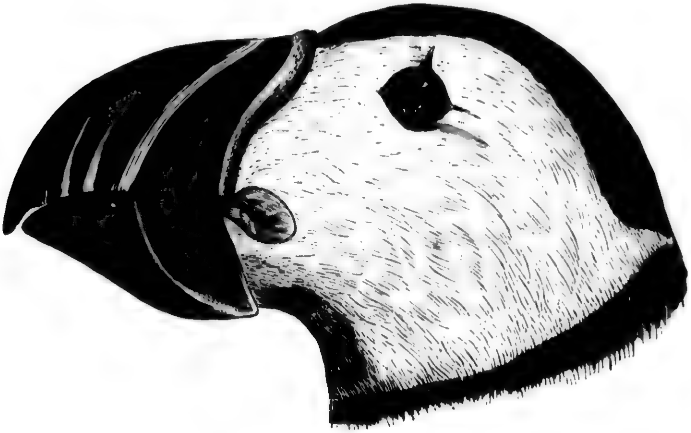
Fratercula arctica, var. *glacialis*, COUES, Key, 1872, 340; Check List, 1873, no. 618 *a*.

Fratercula arctica glacialis, RIDGW. Nom. N. Am. B. 1881, no. 743 *a*. — COUES, 2d Check List, 1882, no. 855.

HAB. Coasts and islands of the Arctic Ocean, from Spitzbergen to Northern and Western Greenland; also probably west shores of Baffin's Bay and Northern Labrador.

Sub-Sp. Char. Exactly like *F. arctica*, but bill much larger, and general size also greater. Wing, 6.80–7.40 inches; culmen, 2.00–2.30; gonys, 1.40–1.60; depth of maxilla at base, .75–.90, of mandible, .70–.80; tarsus, 1.10–1.35; middle toe, without claw, 1.45–1.60.

This bird is apparently a larger hyperborean race of *F. arctica*, since there appear to be no differences from the latter except larger size. The material at our command is, however, very small, embracing only three examples. It may not be more worthy of separation from the true *F. arctica* than is the very small-billed form breeding on the coast of France, which seems to represent the opposite extreme of size.



F. arctica glacialis, summer adult.

By most writers this is regarded as being a mere variety of the *arcticus*. Bonaparte speaks of it in his Synopsis as not uncommon in winter on our coast. Audubon only met with it once, and even then was not certain of its identity. This was at the outer side of Grand Menan, in the Bay of Fundy. None were seen by him in Labrador. The bird which he figures for the *glacialis* was probably *corniculata*.

Professor Newton was informed by Mr. Proctor that two specimens of this Puffin had been received by the latter from Iceland. Professor Newton also states that he found this form of Puffin the least common of the *Alcidæ* in the waters about Spitzbergen. Ross, however, states that it was found in considerable numbers on Walden and Little Table islands; but Dr. Malmgren states that such was not his experience. The latter, however, mentions that he saw several near Norway and Amsterdam islands, and in June some were shot in Treurenberg Bay. He also found them on Bear Island, but not in great numbers. He observed them several times at a considerable distance from land. They were most plentiful in Sassen Bay, forty miles from the open sea. No mention is made of their breeding, and I have no information in regard to this or as to any of their distinctive breeding habits. Even if this bird is specifically distinct from *arcticus*, there is every reason to suppose its habits to be nearly identical with those of that and of other kindred species.

Two eggs in the Smithsonian Museum from Greenland (Drouet) purporting to be of this species are not distinguishable from those of the *arcticus*, and measure, one 2.65 by 1.85 inches, the other 2.70 by 1.85.

Fratercula corniculata.

THE HORNED PUFFIN.

Mormon corniculatum, NAUM. Isis, 1821, 782, pl. 7, figs. 3, 4 (Kamtschatka). — CASS. in Baird's B. N. Am. 1858, 902. — BAIRD, Cat. N. Am. B. 1859, no. 713. — DALL & BANNIST. Tr. Chicago Ac. I. 1869, 308.

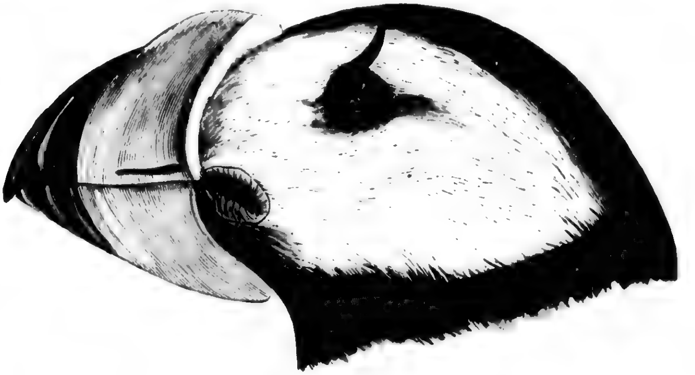
Lunda arctica, PALL. Zoog. Rosso-As. II. 1826, 365 (part).

Fratercula corniculata, GRAY, Gen. B. III. 1849, 637, pl. 174. — COUES, Pr. Ac. Nat. Sci. Philad. 1868, 24; Key, 1872, 340; Check List, 1873, no. 617; ed. 2, 1882, no. 853; Elliott's Alaska, 1875, 202. — RIDGW. Nom. N. Am. B. 1881, no. 744.

Mormon glacialis, AUD. Orn. Biog. III. 1835, 599, pl. 293, fig. 1; B. Am. VII. 1844, 236, pl. 463 (not of LEACH). — GOULD, B. Eur. V. 1837, pl. 404.

HAB. Coasts and islands of the North Pacific, from Kamtschatka to Sitka.

SP. CHAR. *Adult, breeding-plumage:* Pileum uniform drab or grayish brown; entire side of the head, including a broad superciliary stripe, white; lower part of neck (all round), with entire upper parts, uniform deep black, the throat more fuliginous, and changing to smoky gray toward the base of the mandible. Entire lower parts, except as described, plain white, the lining of the wing uniform smoky gray. Soft eye-horns brownish black, with a delicate silky gloss; naked eye-ring vermilion; tip of bill, to between 2d and 3d groove, salmon-red along culmen and gonys, elsewhere brownish red; base of bill very light and bright chrome-yellow, the tumid rosette at the corner of the mouth bright orange, as is also the interior of the mouth and the tongue; iris brownish gray; feet intense vermilion-red during height of breeding-season, but much paler both before and after.[1] *Adult, in winter:* Bill much broader through the middle portion than at the base, the culmen being more or less arched just behind the middle portion; destitute of the basal shields; the gonys horizontal and nearly straight for the basal half, then perfectly straight, and forming a decided upward angle to the tip; rictal rosette nearly obsolete, pale yellow, and superciliary horn absent. Color of bill dark brownish, the terminal portion lighter, and tinged more or less with orange-reddish. Side of head ash-gray, becoming sooty blackish on lores and orbital



F. corniculata, summer adult.

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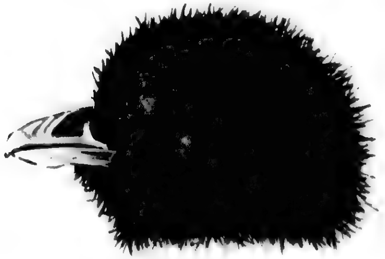
[1] The Authors are under obligations to Dr. L. Stejneger for the privilege of consulting his notes and colored drawings made from freshly killed specimens, and for his kind permission to make use of them here. They are also indebted to him for much information concerning the perplexing transitions of plumage and other particulars regarding various *Alcidæ* which could only be known from a study of these remarkable birds in their natural haunts.

region. Plumage otherwise as in summer, but pileum darker or blackish brown. Eyelids brownish gray, feet pale reddish. *Young:* Similar in plumage to the winter adult, but bill very different, being much narrower, the culmen not at all arched, and the terminal portion of both maxilla and mandible destitute of any trace of transverse grooves. *Downy young:* Uniform fuliginous-black or dusky, the abdomen abruptly white.



Downy young.

Total length, about 13.00 inches; extent, 24.50; wing, 7.00–7.25; culmen (chord), 2.00–2.25; gonys, 1.60–1.70; depth of maxilla at base, 1.15–1.25; of mandible, .70–.80; tarsus, 1.15–1.25; middle toe, 1.55–1.65.

This species is common to the Northern Pacific Ocean, and is found along the Alaskan coast and on nearly all the islands in Behring's Sea. It also occurs on the eastern shore of Asia, and was taken in the Sea of Ochotsk by the naturalists connected with the Rogers Exploring Expedition.

Mr. Bannister mentions this species as being common on Whale Island, north of St. Michael's. This island is steep and rocky, and landing on it except in very favorable weather is difficult. Upon the only occasion on which it was visited no nests were discovered, though he is confident that both this species and the Tufted Puffin breed there, young birds scarcely able to fly having been captured. The birds nest in the deep and narrow interstices of the rocks, entirely out of reach; and even if the nest is within the reach of a man's arm, it would be hazardous to attempt to rob it, except in the absence of the parent bird, whose powerful bill is capable of inflicting a very severe wound. An Eskimo boy in Mr. Bannister's service, not having a pocket, was so careless as to put a nearly grown young Puffin of this species for security under his upper garment, and was severely lacerated by the bird.

Mr. Dall also speaks of this bird as being extremely abundant on the rocky islands near St. Michael's. It was also observed by him at Plover Bay, Coal Harbor, Unga Island, and Aliaska. It has been obtained at Kotzebue Sound, and was procured abundantly at Sitka and Kadiak by Mr. Bischoff.

Mr. Dall also states, in his Notes on the Avifauna of the Aleutian Islands from Unalashka eastward, that the *F. corniculata* is quite rare on those islands. It is, however, very common in the Shumagin Islands, where it appears to entirely take the place of the *Lunda cirrhata*. It is resident there throughout the year, and breeds in holes and crevices in the cliffs of Round Island, Coal Harbor, and Unga. The eggs of this species were obtained there; and though the parent bird, which was caught on the nest, managed to escape, they were well identified. The eggs which were then taken were single, one in each nest, and were of a mottled rusty color with dark spots, though he had expected to have found them white. These eggs, as it now appears, must have been discolored by the soil on the rock on which they were laid, as the color of the egg when fresh is white.

To this Mr. Dall adds, in his Notes on the Birds of the Islands west of Unalashka, that he there found it resident and abundant from Attu to the Shumagins, and with habits similar to those of the *L. cirrhata*.

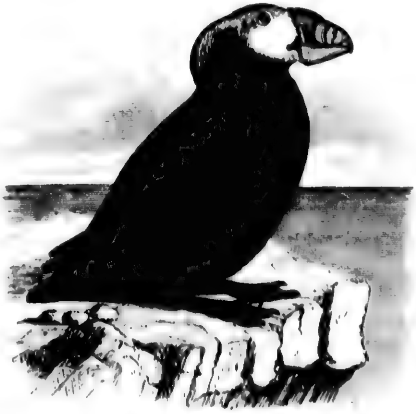
Mr. H. W. Elliott found this species common in the Prybilof Islands, and states in reference to it, that the eye never fails to be arrested by this odd-looking bird, with its great shovel-like, lemon-yellow and red bill, as it sits squatted in glum silence on the rocky cliff-perches, regarding approach with an air of stolid wonder, seemingly fashioned with especial regard to the fantastic and the comical. In common with the *cirrhata*, it comes up from the sea, from the south, to the cliffs of the islands about the 10th of May, always in pairs, never coming or going in flocks. It makes a nest of dried sea-ferns, grass, moss, etc., far back or down in some deep rocky crevice, where the egg when laid is generally inaccessible. It lays but a single egg, large, oblong-oval, pure white; and, contrary to the custom of Gulls, Arries, Choochkies, etc., when the egg is removed the Sea Parrot does not renew it, but deserts the nest, probably locating elsewhere. The young chick Mr. Elliott was not able to get until it emerged fully fledged and ready for flight, in August, when it does not differ materially from its parent; it leaves the islands about the 10th of September. This bird is said to be very quiet and unobtrusive, and not to come to the islands in large numbers, and to breed everywhere else in Behring's Sea. Its flight is performed with quick and rapid wing-beats, in a straight and steady course. There is no difference between the sexes as to size, shape, or plumage.

The egg is noticeably more elongate than are those of *Fratercula arctica* or *Lunda cirrhata*, though not more pointed. The shell is rough and of a dead white, and, so far as known, without any obscure or obsolete marking of the other species. The specimens measure about 2.75 inches in length, and 1.75 in their larger breadth.

GENUS **LUNDA**, PALLAS.

Lunda, PALL. Zoog. Rosso-As. II. 1826, 363 (type, *Alca cirrhata*, PALL.).
Sagmatorhina, BONAP. P. Z. S. 1851, 252 (type, *S. Lathami*, BP., *Lunda cirrhata*, juv.!).
Gymnoblepharum, BRANDT, Bull. Sc. St. Petersb. II. 1837, 349 (type, *Alca cirrhata*, PALL.).
Cheniscus, GRAY, Cat. Gen. & Subgen. B. Brit. Mus. 1855, 127 (same type; not of EYTON, 1838).

CHAR. Similar to *Fratercula*, but nasal shield rapidly increasing in width toward the top, where forming a thickened, slightly arched ridge nearly equal in length to the culmen; mandible smooth, without grooves; eyelids without horny appendages; head ornamented by a decurved superciliary tuft of long, silky, straw-colored feathers. Lower parts dusky.



L. cirrhata, summer adult.

Lunda cirrhata.

THE TUFTED PUFFIN.

Alca cirrhata, PALL. Spic. Zool. V. 1769, 7, pl. 1 and pl. 2, figs. 1, 2, 3.

Lunda cirrhata, PALL. Zoog. Rosso-As. II. 1826, 363, pl. 82. — COUES, Pr. Ac. Nat. Sci. Philad. 1868, 26. — RIDGW. Nom. N. Am. B. 1881, no. 745.

Mormon cirrhata, BONAP. Synop. 1828, 429. — AUD. Orn. Biog. III. 1835, 36, pl. 249, figs. 1, 2; B. Am. VII. 1844, 234, pl. 462. — CASS. in Baird's B. N. Am. 1858, 902. — BAIRD, Cat. N. Am. B. 1859, no. 712. — DALL & BANNIST. Tr. Chicago Ac. Sci. I. 1869, 308.

Fratercula cirrhata, STEPHENS, Gen. Zool. XIII. 1825, 40. — COUES, Key, 1872, 341; Check List, 1873, no. 716; Elliot's Alaska, 1875, 203.

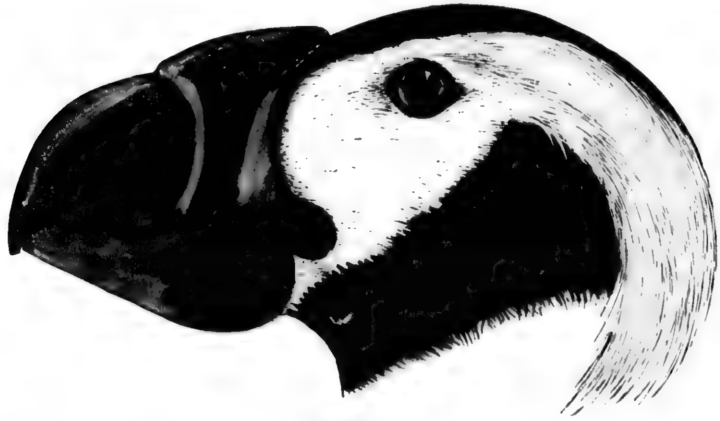
Fratercula cirrata, COUES, 2d Check List, 1882, no. 856.

Sagmatorhina Lathami, BONAP. P. Z. S. 1851, 202, pl. 44 (young). — COUES, Pr. Ac. Nat. Sci. Philad. 1868, 31, fig. 3.

Sagmatorhina labradoria, CASS. in Baird's B. N. Am. 1858, 904 (not of GMEL.). — BAIRD, Cat. N. Am. B. 1859, no. 716.

Fratercula carinata, VIG. Zool. Journ. IV. 358.

HAB. Coasts and islands of the North Pacific, from California (south of San Francisco Bay) to Alaska, and across, through Aleutian chain, to Kamtschatka and Japan; also coasts and islands of Behring's Sea. Occurrence in the Arctic Ocean far from Behring's Straits doubtful, but examples said to have been taken on the Kennebec River, Me. (AUDUBON), and in the Bay of Fundy (VERRILL). On the Pacific coast breeding at least as far south as the Farallon Islands, coast of California.



Summer adult.

SP. CHAR. *Adult, breeding-plumage:* Upper parts uniform deep black; lower surface fuliginous-dusky, sometimes with the feathers on the breast and abdomen grayish white beneath the surface, but the entire sides, with whole under and lateral portions of head and neck, always uniform dark fuliginous. Feathers bordering the bill, all round, with entire loral and orbital regions, dull white; on each side the crown, above and behind the eyes, a tuft of much elongated, narrow, filamentous feathers of a straw-yellow or pale buff color. Terminal portion of bill bright salmon-red (more or less tinged with brownish posteriorly), the basal part light olive-green, the deciduous culminal ridge more apple-green; narrow rim of naked skin around base of bill, together with rosette at corner of mouth and naked eyelids, vermilion-red; iris creamy white, dirty white, or light grayish cream-color; feet vivid salmon-red (Stejneger, MS.). *Adult, in winter:* Supra-auricular tufts wanting; basal shields of the bill wanting, and replaced by a soft skin of a dusky brown color; terminal portion of the bill exactly as in summer, the grooves varying in distinctness according to age. Otherwise exactly as in summer, but feet pale, dirty flesh-color (Stejneger, MS.). *Young, about seven months old:* Much like the winter adult, but terminal portion of bill without trace of grooves, and of a much duller red or brownish orange color; distinct supra-auricular tufts of a deep isabella-brown or fawn-color, but smaller than in the adult; plumage of the lower parts grayish white beneath the surface; feet fleshy white, the webs deeper dull flesh-color. *Young, about five or six months old* (= *Sagmatorhina Lathami*, Bp.): Differing from the preceding in absence of the supra-auricular tufts and more slender bill. *Downy young:* Uniform fuliginous-dusky.

Total length, about 15.00 inches; extent, 22.50; wing, 7.75; culmen, 1.30–1.45; nasal shield (on top), 1.00–1.10; greatest depth of closed bill, 1.75–2.00; tarsus, 1.20–1.35; middle toe, 1.75–1.90.

The Tufted Puffin belongs to the Pacific waters, but is said to be of occasional occurrence on the Atlantic coast. One example is alleged to have been received from Greenland by Pastor Möschler in 1846; and Audubon states that the specimen from which he drew the figure of his representation of this species was procured near the mouth of the Kennebec, and that it had been shot in the winter of 1831–1832 by a fisherman while it was standing on some floating ice. It was a male in adult plumage, and no other example was seen.

On the Pacific this species occurs from the latitude of San Francisco northward, and breeds wherever found. It is included by Mr. R. Browne in his List of the Birds of Vancouver Island, and is said to be found as far north as Fort Simpson, where the Indians trim their dancing leggings with its beaks. So far as Dr. Cooper has observed, it seems to be confined to the islands north of the latitude of San Francisco, as he has never seen or heard of any south of the Farallones, nor has he ever heard of its occurrence along the main shore, although it may be found on some islands very near the land, especially about the Straits of Fuca; and it perhaps occasionally visits the main shore. It seems to be a constant resident wherever it does inhabit, finding a very uniform climate and abundance of food at all seasons about the islands.

This bird has in general a striking resemblance to the Parrot, especially in its heavy, plump body, its short legs, its rather short and broad wings, its manner of flight, even in its breeding in holes, and the color of its eggs.

On the Farallones these Puffins are numerous, and during Dr. Cooper's visit in June he found them laying, having begun about the 15th. Their burrows were scratched among the crevices of the granite rocks, and were so shallow that, by protecting the hand so that it would not suffer from a severe bite, both birds and eggs could easily be obtained. He saw no appearance of any nest, the dry earthy bottom of the burrow not requiring any. The egg is single, larger than that of the common Hen, white, somewhat blotched with pale brown, and its ends nearly alike. It measures 2.80 inches in length by 2.00 in breadth. Dr. Cooper never heard this bird utter any sound, although there were several of them perched on the rocks very near him during his visit; they seemed to be at rest during most of the day, and, like all birds with white eyes, somewhat nocturnal in their habits. This Puffin feeds about the rocky shores, swimming and diving well; and by some is supposed to force off limpets and other shells from the rocks with its knife-like bill, though no shells are found in its stomach. These birds eat small fish, and perhaps seaweed also.

Mr. Bannister states that though this bird is by no means scarce in some situations at St. Michael's, it is very much less abundant than the *corniculata*. Its tufts are said to be indicative of maturity; young individuals, though otherwise nearly fully fledged, and able to fly, having them very imperfectly developed. Both this species and the *corniculata* are used as food by the Eskimos, and their skins are made into winter dresses by the Magemuts and the Southern Unaleets. Mr. Dall adds that this bird is abundant on Besborough Island, and that it was plentifully obtained by Mr. Bischoff at Sitka and Kadiak. It is seen abundantly at Unalashka, on the outer rocks and cliffs, where it breeds in inaccessible situations, but never in the harbor, where it is resident. None were seen on the Shumagins. Mr. Dall also found it abundant west of Unalashka, throughout the islands, more especially the unfrequented ones. It was more rare east of Unalashka. Mr. Dall states that it lays two eggs. He found fresh eggs of this species and of the *corniculata* from May to the end of July. The skins are used by the Western Aleuts for making hunting-shirts.

The Tufted Puffin of authors — the Tawpawkie of the natives of the Prybilof Islands, according to Mr. H. W. Elliott — comes to those islands at the same time with the *corniculata*, and resembles that species in its habits generally. It lays a single large white egg, of a rounded oval shape. He was not able to see a newly hatched chick, owing to the retired and inaccessible nature of the breeding-places. Could Walrus Island be visited frequently during the season, interesting observations might be made there, for the nests are more easy of access. The young when six weeks old resemble the parents exactly, only the bill is lighter-colored, and the plumes on the head incipient. He took eggs from over thirty nests in July. The natives say that it is very quarrelsome when mating, its cries sounding like the growling of a bear, as heard far down under the rocks that cover its nest. The egg is much thicker and more capacious than that of *corniculata*, though no longer. The shell is rough, dead white, and, besides the frequent discolorations, shows in several specimens very pale obsolete shell-markings of purplish gray. Several of Mr. Elliott's specimens measured: 2.85 by 1.95 inches; 2.80 by 1.92; 2.75 by 2.00; 2.65 by 1.95.

A few specimens of this bird were obtained from the Kurile Islands in summer by Mr. N. Fukusi, where its common name is *Etopirika* ("Ibis," 1878).

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